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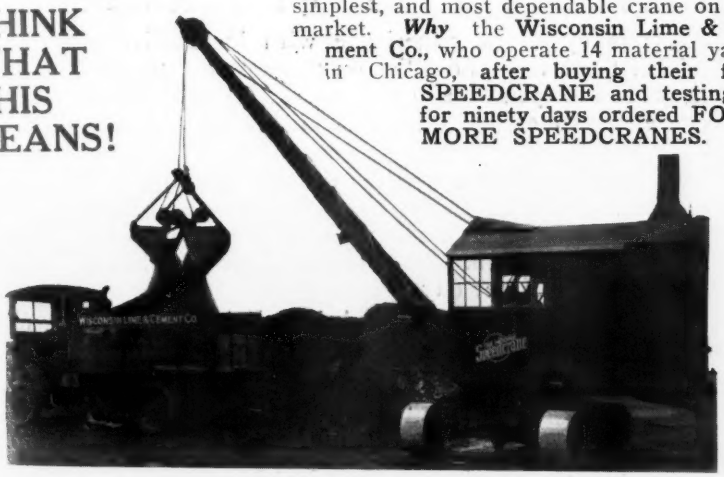

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**MOORE BROTHERS**

**39 South La Salle Street** **Chicago, Ill.**

February, 1922



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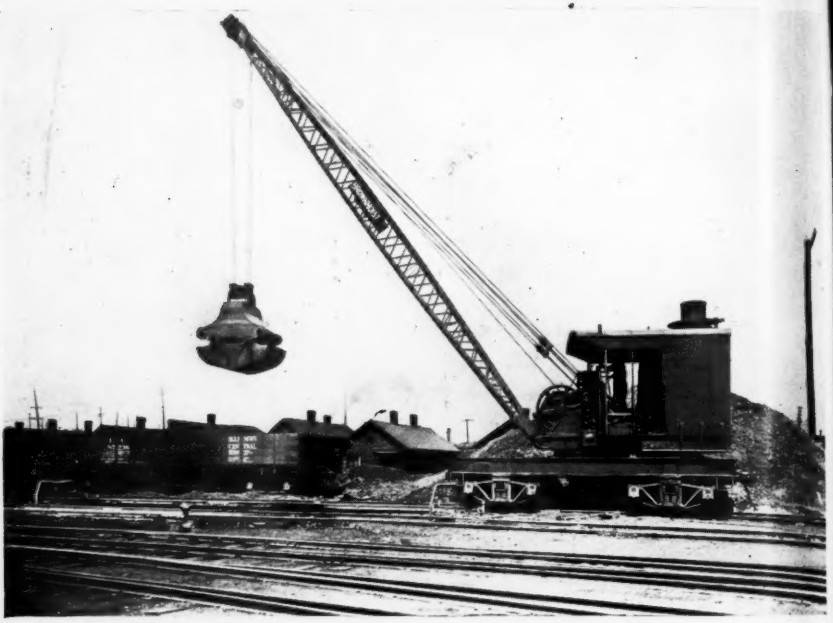

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# BROWNHOIST

**MATERIAL HANDLING MACHINERY**

# Pit and Quarry

*Member Audit Bureau of Circulations*
*A Monthly Journal for Producers of Sand, Gravel, Stone, Cement, Gypsum and Lime*

VOL. 6 CHICAGO, ILL. FEBRUARY, 1922 NO. 5


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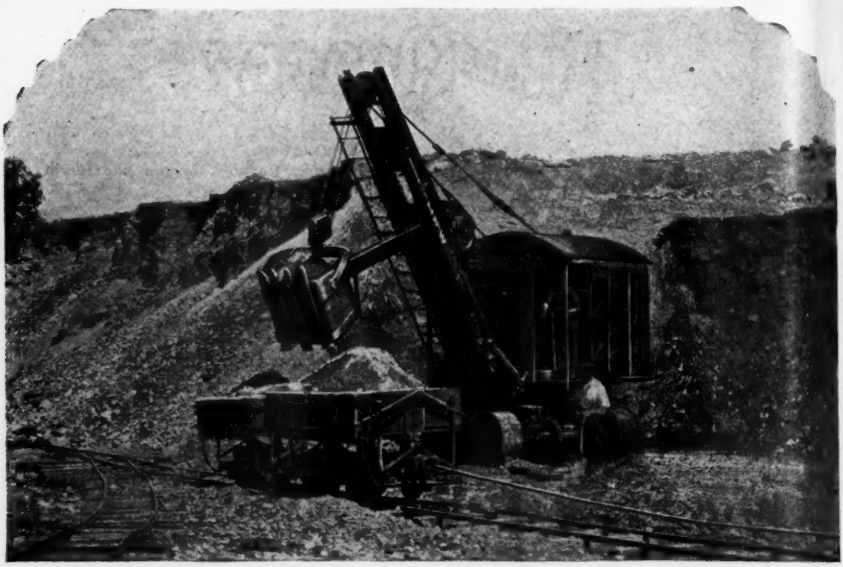

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# Pit and Quarry

Vol. 6 Chicago, Ill., February, 1922 No. 5

## Good Roads Show Successful

THE Thirteenth National Good Roads Show held in Chicago from January 16 to 20 will long remain as an impressive landmark along the way that earnest promoters of the "good roads movement" have been traveling.

The program of the American Road Builders' Association, under whose auspices the show was held, furnishes an index to the character of the enterprise as a whole. In this program are the names of the most prominent road builders of the country, men whose interest and participation in a project guarantee its worth and augur well for its success. And these men did more during the time the convention was in progress than merely grace the program. They went to work seriously and earnestly at many of the problems with which road builders have to contend and all who attended the sessions profited.

Most of the topics of discussion, of course, were those not intimately connected with the work of material producers. However, the attitude was to consider the producers of stone, gravel, and cement as partners in the business and much was said of the superior quality of material that is wanted and that only the commercial producer, with proper equipment and experience, can supply.

The exhibits of machinery were such as have never yet appeared at any show of similar kind. Much has been done in the way of development within the past year and the influence of this work was easily apparent in many of the products. Many well-known machines appeared with new features and a number of pieces of equipment appeared for the first time. All the visitors to the show were quite impressed with the displays and the affair was undoubtedly the means of getting before a good many men just the machines they needed. The exhibitors were well satisfied with the results they secured.

Considering the general satisfaction of those who conducted the convention and those who exhibited their machinery there, the show of this year was the best that has yet been held and Chicago will undoubtedly be honored again next year by being made the place of exhibition for 1923.

## Screenings

SCREENINGS are no longer a by-product. In fact there is scarcely such a thing as a by-product any more, in any line of industry. Practically everything has a commercial value, if only someone will use his head to find a use for it. Screenings at one time were given away. Before that time, some operators spent money to have them hauled off. Now they are just as valuable as any other part of the product. Maybe when agricultural limestone is fully understood, they will be even more so.

---

The Philadelphia Quartz works at Anderson, Ind., resumed operation recently. Two of the three furnaces are being used now and a small force of men were put on.

# Some Observations for 1922

By J. H. TREGOE
Secretary-Treasurer National Association of Credit Men

THE year 1921 will pass into history as furnishing a complexity of problems more difficult, more intricate and more significant than any year of the present generation. We have passed through the year with no more serious mishaps than would come to us in regular course, as a result of indulgence in over-optimism and overfeeding in unwarranted expectations. A glance backward tells us clearly enough that we have suffered under our inability to estimate correctly the disorders of an over-burdened economic condition. As we look back we can see that too much stress was being laid at times upon surface conditions and too little analysis given to basic conditions.

There has been in the past thirty days a smaller visible movement of business on the surface. In a number of seasonal lines demands have decreased for the reason that the rather feverish demands which accelerated business in October and a part of November have left goods on the shelves, and unseasonable weather in many sections of the country has been responsible for disappointments in retail sales.

We believe the most serious factor in the present situation is the distressful condition in which the farmer finds himself. We have made a great god of industry, have devoted too little attention to the efficiency of our land, and because of this neglect are now passing through a most difficult period. In most of the agricultural sections the farmer is doing his level best to liquidate old debts; he cannot purchase new equipment; his home requirements are reduced to a minimum, and the stores supplying the farmers are as a consequence getting little business. Collections are also very slow. Many accounts are positively frozen and the outlook is that they will continue frozen until the coming new crop. We emphasize this situation in the hope that consciousness may come to the business public of the need of devoting more consideration to our agricultural problems. We must also turn the eyes of the farmer from Congress to the land; must build up the efficiency of the farmer, fully recognizing that the country cannot be prosperous with its agricultural interests in distress.

Though business on the surface has slowed down and many a concern is passing through a crisis as a result of an accumulation of untoward circumstances, yet we are glad to say that basically the improvement noted before has continued and there is more reason for confidence than ever. We feel safe in saying this because, first of all, the international situation is improving, and one of the things that give us confidence here is that we of America are beginning to recognize the need of lending a hand to Central Europe. We now see that enlightened selfishness suggests a spirit of helpfulness to the sorely tried peoples there.

Readjusting wages downward has continued, and this is a significant movement, essential to establishing a solid basis for a forward movement. In this connection, in passing, we would point out that overhead is one of the most difficult problems to solve, and we wonder if our enterprises are going at it with the proper determination and aggressiveness. Capital cannot be built up unless profits are made sufficient to cover reasonable overhead, interest on investments, taxa-

tion and something for surplus. Associated with this and encouraging along this line is an increased efficiency in labor that is discernible. Men, consciously or unconsciously, are now recognizing the human waste which results from two men doing a piece of work which one man could do.

Again, as a basis of improvement, the transportation situation is getting better. The readjustment of operating costs downward, including wages, is giving confidence in this situation and financial abilities to provide for needed equipment and improvements. There is at present some hesitancy in the movement of basic commodities, such as iron and steel, copper, etc., but such hesitancy is to be expected at a time when prices are still under revision and the slowness of movement must not be construed as an unfavorable indication. Employment has remained about stationary, though showing a slight increase.

In construction there are favorable factors. The prices of building materials are being revised downward and in November the contracts for construction were but 14 per cent less than in October. The easier money situation and lower costs of materials should accelerate construction, and we deem this one of the favorable basic influences.

These observations cannot but indicate how careful the student and observer must be in his effort to interpret the significance of basic facts. Putting by the side of the favorable factors the slowing down of business, discernible since our previous letter, the sluggishness of collections, the distress of the farming districts, the continuing low prices for agricultural products, yet, all in all, we are firmly convinced that the improvement, basically, has continued and, barring unforeseen circumstances, we should see some revival in the early spring.

We advise earnestly for the American business man, that faith and courage control. Our sound condition, fundamentally, gives ground for faith and courage. Indeed, there is no reason for the slightest, pessimism, but every reason for the greatest hope and the greatest confidence. Watching the price, mastering the overhead, increasing the efficiency of our land, helping to upbuild our basic resources, creating an attitude of helpfulness toward stricken European peoples—these are the things worth while.

## Will Be Bigger Year

### Statisticians Expect More Activity in Construction Industry

The remarkably good showing of the month of December, following the good records of the four previous months, give added confirmation of the revival of construction activity. Every present indication is that 1922 will see a measurably larger volume of construction than the program carried through in 1921, according to reports of the F. W. Dodge Company.

The principal factors favorable to a big construction year are the still unsatisfied demand for buildings of every class and the steadily increasing amount of money available for investment in construction projects. These factors are not uniformly favorable everywhere. Recovery in recent months has been rapid in the East and very slow in the Central West. This unevenness in the rate of recovery may be expected to continue well into 1922. The recovery of general prosperity in the Central West will continue to be slow, and general business conditions in that section will retard speedy revival of construction activity, particularly in agricultural communities.

While it's reasonable to expect increased activity in every class of construction projects, it is probable that residential building will again predominate. Public works, business buildings and educational buildings, all of which made good records for activity in 1921, may be expected to continue at a satisfactory rate. Even in-

dustrial buildings, which special class is likely to be about the last to return to a normal rate of activity, should show an increase over 1921.

The records of construction that was contemplated during the past three years indicate that the community comprised within the F. W. Dodge Company's territory (including about three-fourths of the total construction of the country) has collectively worked toward a three-billion dollar total each year. The average accomplishment per year has amounted to two and a half billions. The year 1920 was the only one since the war that started off at a sufficiently high rate to reach a three-billion dollar total. That rate was maintained for four months, and then the reaction came. This reaction was caused not only by the reaction in general business conditons, but it was also influenced by the fact that there was a sufficient supply of neither materials, labor nor transportation facilities to carry through the extensive program that was mapped out.

In 1922 the community's collective effort will be toward a three-billion dollar construction year (or four billions for the entire country). The supply of materials, labor and transportation facilities is still inadequate to carry through such a large program. It is neither likely nor desirable that a program of such magnitude be actually started. Slowness of recovery in general business, labor disputes still unsettled, and other retarding factors may be expected to curb a too rapid boom in construction. If this year shows a moderate margin over two and a half billions invested in construction contracts in the twenty-seven Northeastern States (say an increase of 8 or 10 10 per cent over 1921) rather more evenly distributed than the 1921 construction was, it will justify present expectations and spell increased prosperity for the industry.

---

The Glens Falls Portland Cement Co., Glens Falls, New York, has effected a 15 per cent reduction in wages at their plant. In addition to the reduction, the working day of the yard men and shop employes will be cut from 10 to 9 hours. Even with this reduction, however, the scale of wages will be higher than that generally prevailing in the cement industry.

# Construction Forecast

## U. S. Chamber of Commerce Predicts Good Building Business in Most Localities

The greatest building activity in this country next year will be in the industrial states, according to a forecast of the building outlook made recently by the Committee on Statistics and Standards of the Chamber of Commerce of the United States.

It is pointed out by the Committee that there will be a good many business buildings next year, and a large number of them will be in the shape of alterations and enlargements. On the other hand, it says, it is unfortunate that not a great many farm buildings, such as dwelling houses, barns, cribs and the like are contemplated.

According to the Committee, California leads the other states with respect to probable construction, while good likelihoods of construction lie in the Central West and in the East.

"There, also, are a great many possibilities for building in the Southern States," it says. "These possibilities are greater than seemed likely under the stringent conditions which prevailed there prior to the rise in the price of cotton.

"The prospects for building in the strictly agricultural states are not so favorable. There are several reasons for this, principally the exceedingly low and unremunerative prices on farm products, which seriously reduce the purchasing power of the farmer. In addition, the banks generally throughout the agricultural sections are fully loaned up, so that the farmer finds it difficult to obtain either ready money or cedit. In such circumstances there is not likely to be much building in these states, especially on farms, for the simple reason that the farmer is financially unable to build.

"Three factors enter largely into the problem of building during the coming months: the high price of material, high price of labor and the question of obtaining funds for construction. Prices of material, on the whole, are much the more favorable of the three factors. It is only here and there that there is any apparent difficulty in this respect. The matter of too high priced labor does not stack up so well as that of material,

but there is a general belief that not only are matters improving in this direction but when springtime comes, the long period of probable idleness of labor will naturally tend to bring about a much more favorable solution of this problem than is now presented.

"There are the usual scattered exceptions to any general statement. Labor is plentiful in some sections, scarce in others. The matter of obtaining money for construction is the most difficult problem of all. It is not that money seems to be so high in price as that it is hard to get, particularly in the agricultural sections and on the countryside rather than in the large cities.

"Apparently when construction gets well under way, it will comprehend a great many dwelling houses in its purpose and intent; this because of the supreme necessity of more adequate housing almost everywhere.

"There also will be a very large number of educational buildings, such as schools, and additions to colleges and universities. The numerous 'drives' for funds set on foot by all sorts of educational institutions will bear fruit in many new buildings next spring. In particular, the great state universities of the West and South have more liberal appropriations from their various legislatures for building purposes than for many years. There are likewise a number of public buildings under way.

"Few things tend to hasten the return to better times more than the building industry. Things used in the building of dwelling houses call upon virtually all the industries of the country for their products. A general and far-reaching construction program in this country in 1922 is the best possible harbinger of a return to more prosperous conditions."

---

It is announced that the Aetna Portland Cement Company, a Maine corporation with one plant at Fenton, Michigan, has purchased 33 acres on the Saginaw river near Bay City, Michigan, and proposes to erect a plant costing over $1,000,000. The dredging and preliminary work will be started at once.

---

The Celite Company, at Lompoc, California, is planning to put on a night shift and increase their working force at their chalk rock quarries. The present number of men employed is about 200.

# Construction Recovery

## General Contractors Conference Pervaded with Optimism As To Future

A definite assurance that construction recovery is under way and that it is the first phase of a general business revival sums up the results of Cleveland, Jan. 17 to 19 by the Assothe construction conference held in ciated General Contractors of America. Evidence of this fact, both statistical and informal, abounded in the discussion of the delegates and in the papers presented as a part of the program.

Col. Leonard P. Ayres, who was chief statistical officer of the A. E. F. and who is now vice president of the Cleveland Trust Co., expressed the belief that prices will continue to fall, intermittently, for ten or twenty years more, but conveyed assurance that the construction industry will be immune to many of the embarrassments of the coming period, because it supplies a market in which there is a latent demand equal to 2¼ years normal production of building.

"In other words," said Col. Ayres, "construction can go along for nine years at 25 percent above normal and only fill the normal demand by the end of that time."

Col. Ayres said that building finance problems had commenced to adjust themselves, through greater abundance of money. "The acrimonious discussions between yourselves as contractors and ourselves as bankers are about over," he remarked. "Within six months so much money will be for borrowers that owners will be able to arrange building loans on prewar terms."

Charts shown by Col. Ayres indicated a subnormal volume of building for every year since 1912. Even the apparent large building figures for 1919 and 1920 were only apparent, he declared. The cost was large but the building was far behind even the current needs of the time. The only time in the last nine years when the volume has gone above average requirements was for the last few weeks of October 1921. This was chiefly residence building, but it shows in Col. Ayres' opinion that the tide is rising rapidly.

# Hundred Per Cent Plant

## That's What They Call the New One Louis Laun Has Built at Elkhart Lake

PIT No. 6 of the Elkhart Sand and Gravel Company at Elkhart Lake, Wis., while the "baby" in age and size among the plants that the company is operating in the same locality, is the one of which they are proudest. They call it their "hundred per cent plant" and claim that it is one of the most efficient they have seen anywhere.

The Elkhart company owns large gravel deposits in the region in which their plants are being operated. Good gravel is found for four miles along both sides of the Chicago, Milwaukee & St. Paul tracks, with a reasonably light overburden and a small percentage of impurities. At plant No. 6 the overburden does not exceed a depth of about 3 feet. As will be seen from the photographs and drawings, the gravel is found in a hillside deposit.

The first stripping was done by hand and the gravel taken out at the beginning of operations was used in constructing the foundations of the plant. After the work had been carried past this point and everything was ready for production, the stripping operations were extended with a Fordson tractor and strip scraper. The level hill at the top was exposed and access given to a source of gravel supply that will be good for many years to come.

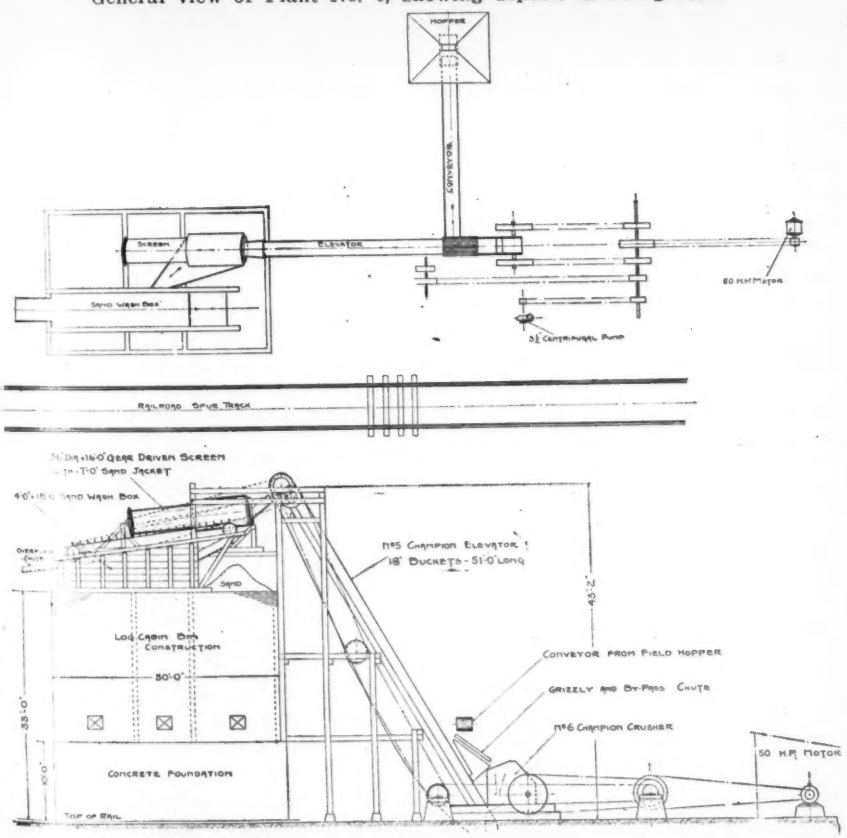
The plant was designed by the Good Roads Machinery Company, under the direction of Mr. J. R. Bakstad, manager of the Chicago office, and most of the machinery was furnished by this concern, which is designing and building gravel plants in all sections of the country. The Good Roads Machinery Company are manufacturers of the crusher, elevator, conveyor, screens and dragline sand separator used in this installation.

One of the chief features of the plant is that the excavating equipment may be moved about into all parts of the deposit, maintaining connection with the plant by means of a belt conveyor which can be lengthened out as occasion demands and which permits a great enlargement of the working radius. When the deposit at any particular part shall become depleted or the working get down too low for convenience, it will be necessary only to change the position of the anchorage, or the hoist house and the anchorage, to open up a new supply without in any way changing the arrangements at the plant proper.

The material is taken out with a ½-yard Sauerman-LeClaire scraper with a span of about 200 feet. The gravel is packed a bit hard in places, but the method of excavating that is used is handling the work very well and delivering to the plant without interruption all the gravel necessary to insure continuous operation. This system is operated by a Munday belted hoist run from a 30 h.p. motor.

The scraper delivers to a hopper which feeds through a steel apron feeder to a concave belt conveyor 22 inches wide. This conveyor brings the material to a special bar grizzly spaced 2 inches and set at an angle of about 45 degrees. This allows the undersize to go ahead to the elevator and throws back the oversize to a No. 6 Champion jaw crusher with a 12x26-inch jaw opening and a capacity of 24 to 35 tons per hour. This machine could, if occasion required, handle half of the material going through the plant without slowing up operations appreciably. As a matter of fact, it has never been called upon to give service anything like that, for the deposit runs about 40 per cent sand and 60 per cent gravel, the greater part of which is of sizes that do not

General view of Plant No. 6, showing deposit in background




Plan View and Side Elevation of Elkhart Lake Plant No. 6

View of Plant No. 6 from the loading track

require crushing. Few of the boulders run over 8 or 10 inches in size and the small number that do are sledged before being sent into the plant.

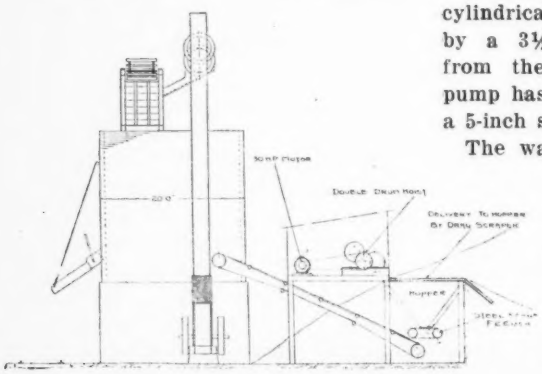
Another important feature of the plant is seen at this point in the operations. Materials are elevated only once. Nothing is dropped back from the screens at the top to be re-crushed and re-elevated. The only material fed to the crusher is that rejected at the grizzly, just as it comes from the scraper.

The elevator used to raise the undersize materials and the crushed gravel is of the continuous bucket type, 51 feet long. Buckets are 18x12x 8¼ inches, mounted on double-strand malleable iron chains. Buckets are made of one piece of steel with lapped and riveted corners.

This elevator feeds into a gear-driven cylindrical screen 36 inches in diameter and 16 feet long. This screen is surrounded by a sand jacket 48 inches in diameter and 7 feet long, with ¼-inch perforations all around. This jacket passes all sand, water and impurities to the dragline sand separator. The gravel is fed from the screen and jacket into bins.

Washing is done by sprays in the cylindrical screen supplied with water by a 3½-inch Amsco pump driven from the main countershaft. This pump has a 4-inch discharge line and a 5-inch suction line.

The water and solids fed into the sand separator are violently agitated by an endless chain of scrapers and all soluble impurities are carried off with the water over a spillway at the end of the separator. At the other end the scrapers keep the washed sand moving up along the



End Elevation of Elkhart Lake Plant No. 6

General view of Plant No. 5, located about ¼ mile away

inclined bottom of the separator, at the edge of which they are dropped into bins with the impurities and excess water removed.

All machinery at this plant except the hoist is run from a 50 h.p. motor. Maximum horsepower required last season was 39.

There are bins for two sizes of gravel and one of sand. Space is reserved in the plant for another dragline separator to reclaim another size of sand, but no bin space has been provided at the present time for this other size.

Bins are 20 feet wide, 30 feet long and 33 feet high. They extend to the bottom of the concrete foundation; in other words, all the way to the ground, and the space between the ground and the spouts is used for dead storage. Foundation walls extend 10 feet above the track level. Bins are of the log cabin type of construction. The loading chutes have wide spouts, high sides and pivotal gates. The flow of gravel is controlled by setting a ratchet and the man engaged in loading cars is able to regulate the speed of loading so that ample time is given for moving cars.

This is a two-man plant, one man at the hoist and one at the loading. The plant has been in operation just one year, and all last season they turned out 500 tons a day with two men.

The loading track is a 1,000-foot extension of the spur track leading to Plant No. 5, which has a capacity of 1,600 tons daily. Cars are moved during loading by gravity.

Water is secured from a small creek 300 feet from the plant. A ditch leads the water to a well near the centrifugal pump which passes it to the screens.

---

The Industrial Sand and Gravel Corporation of Manhattan, New York, has been organized with a capital of $10,000. Organizers: H. P. Schmidt and J. H. Mudge. W. A. Hanscom, attorney, with offices at 109 Broad Street.

# Manufacturers, Not "Stone Diggers"

A paper presented before the National Crushed Stone Association
By HARRY H. BRANDON
of the Ohio Marble Company, Piqua, Ohio

I have asked several engineers and contractors, "Where is the weakest spot in macadam construction, what is the chief cause for the unsatisfactory macadam road?"

In most instances the answer was either "gross neglect" or "unclean stone." Others were poor subgrade, lack of drainage, inefficient construction, working in cold weather, etc. But this fact stood out most prominent: Crushed stone was condemned for faulty manufacture.

The people with whom I talked were not radical. They were not prejudiced. They were consistent men, honest in their endeavor to produce the best possible road.

If unclean stone is the partial cause of dissatisfaction in macadam roads, it is up to us to do something to eliminate this cause.

I have also made investigation regarding the tonnage lost to local operations. In Ohio from January 1st to November 1st, 1921, 113 miles of various types of macadam road were sold by the State Highway Department. Of this total 38 miles were constructed from local quarries established for the sole purpose of furnishing material for one job. I do not know how many of these quarries were abandoned after the one job was completed. No doubt many continued to operate and were a thrust into the heart of the established operator. This condition was caused through our laxity in protecting our own business. We should improve our product, which would then insure more substantial macadam road.

Some of you may howl your heads off when asked to install three or four times your present screening and separating equipment, claiming it will increase costs so as to eliminate crushed stone from road construction. This will not be true. Thirty-three percent increased tonnage, which is now lost to illegitimate, local competition, would reduce production cost. The additional market accruing immediately after the 100 percent macadam road is built and time tested would offset any objection from this source.

Macadam is the type of road Nature intended us to have. It qualifies in every requirement for road service. It is only necessary for us to take advantage of the great possibilities of macadam. Improve present specifications to the highest point of efficiency. Then opposition will fade away.

The most important requirements in road construction are not given the consideration they deserve. Hardness, smoothness, wearing quality, ability to withstand freezing and thawing are pretty well taken care of by present day specifications. Elasticity and cohesive and adhesive qualities, the most important of all requirements, are absolutely neglected.

Macadam contains the two elements most important in maintenance, cohesion and adhesion. A surface of macadam a quarter of an inch thick can be laid over a worn road with assurance that it will stay there and render service. A macadam road surface can be worn to a quarter inch thickness and still it would not be necessary to tear up and take away this last remaining thread of macadam.

The weak link in macadam construction is unclean, non-manufactured crushed stone. The good road movement expects us to correct this difficulty and provide material for construction of roads that Nature intended.

The history of crushed stone production is that of easy going, self-satisfied stone diggers. Contractors and users of crushed stone are accustomed to such loose specifications as to permit local operation on practically every job. The crushed stone business must be so perfected and improved upon, as to make this local production unsatisfactory and undesirable, if not altogether impossible.

The only reason the user of crushed stone produces his own material is, the production of crushed stone as it is produced today, is so simple, so easy and so inexpensive that any one can do it. Crushed stone is so cheap.

Loose specifications have created this condition.

Miles of roads have been built from creek-bottom or hillside stone, produced by a "Jitney jaw crusher" driven by a threshing engine and screening with a little hand-made contraption. It would be impossible to estimate the thousands and thousands of tons lost in this manner.

We have two ways of solving this local production problem. The easiest way is to speed up our operating system, loosen up our specifications, reduce costs and sell crushed stone so cheap that no one would think of producing his own material. This policy does not appeal to me. I consider it undesirable and unbusinesslike. It is non-progressive. It does not answer the question of the 100 per cent perfect macadam road.

The other way is to correct specifications to provide a material that is strictly a manufactured product, one that requires attention and care and which is 100 per cent perfect and clean.

The gravel producers saw the necessity of establishing themselves as manufacturers, and did so by insisting on clean material, and have been so successful that there is now almost a universal demand for washed gravel. This automatically eliminated the competition of small local pits.

It is possible, and I believe advisable, for stone producers to create a demand for absolutely clean stone, absolutely properly sized, and by so doing elevate the business from stone diggers to manufacturers of stone.

We, who are interested in agricultural limestone, have nearly the same problem. Agricultural workers, experiment stations and universities tell us, that the efficiency of agricultural limestone is determined by its 100-mesh content. They also tell us that stone too large to pass through a 10-mesh sieve will never be of any value. While in years to come these large particles may completely dissolve, leaching will carry the calcium solution away just as rapidly as it is made soluble.

We should create a demand for agricultural limestone 100 per cent through a 10-mesh sieve and not less than 50 per cent through a 100-mesh.

Eastern Ohio is full of little insignificant pulverizers producing material that meets with present day specifications and that are cheating us out of thousands of tons that rightfully belong to us. If these little pulverizers would deliver a product that is 100 per cent efficient we would not complain.

The great state of Ohio several years ago enacted a lime and limestone law, ostensibly to protect the purchaser. The producers of Ohio insisted that all material passing a quarter inch ring should be classed as agricultural limestone. They forced recognition of an inferior product that is easy to make and which is now their most dangerous enemy.

When the question of freight rate reduction was before the Public Utilities Commission of Ohio, the manufacturer again insisted that his refuse, and unworthy product, be given preferred rates. This was granted and it is now carried on a lower rate than the finely ground product which really and truly is a Godsend and a money maker for the farmer.

Another weak spot in the crushed stone business is our general policy of salesmanship and advertising. We overlook this important phase.

I find that a sale is a matter of mental attitude and is born and completed entirely within the mind of the purchaser. A signed order is merely hieroglyphics which act as evidence and which do not amount to much. The salesman is one of two things. He is either a messenger boy carrying this message from purchaser to producer, or he is a pilot using his influence to guide the mental activities of the purchaser in the proper direction.

I fear too many of our sales activities have been of the messenger boy type. I do not say this with disrespect for the salesman himself, but rather for the general policy that is used by the average producer.

I find a sale to be composed of five parts: First, inspiration; second, desire; third, selection; fourth, decision; fifth, action. Perhaps I ought to say, a sale is composed of six parts. The sixth part, and one of the most important, follows after delivery has been made. Satisfaction and service must be added to consummate a perfect sale.

The first four steps of a sale are taken entirely within the mind of the purchaser and, unless outside influence is given through the medium of a subconscious suggestion, may run wild on almost any course.

The first step in the progress of a sale is inspiration. Inspiration is the mental activity which gives birth to all things which stand for progress and better living. Inspiration may be cultivated by proper advertising and promotional work. At this point crushed stone salesmanship is sadly lacking.

Inspiration for a better road may be brought to a farmer through publicity campaigns. He may be inspired for a better road for the convenience it offers from his farm to his market or to his church, his school, or his social connections, or we may wait for inspiration to be born in his mind through personal pride in his home; or he may become jealous of his neighbor who has a good road, or by being forced to carry his crop in his granary through a high priced period, by not being able to deliver to market.

Good business demands that you cultivate this inspiration for better things and better roads through advertising and publicity campaigns.

The second step, desire, is really intensified inspiration and must follow in the growth of a sale. It is created and grows strong by a repetition of previous events or by observing others, or by the real progressive man in his effort to better general conditions. The same publicity campaign that gives birth to inspiration, will promote desire.

The subconscious mind will advance to the third step, selection. Unconsciously the brain begins to observe the different ways of satisfying inspiration and desire. If the brain belongs to a man who is inclined to be thorough and technical he will find from accepted data and experience just what he wants. However, statisticians tell us that 90 per cent of the people of the United States depend on the other 10 per cent to do their thinking and this tendency is increasing because the 10 percent are willing to do the thinking for the other 90 per cent, thereby swinging them into line with their suggestions. The average purchaser is very susceptible to suggestion and at this point advertising and publicity work are most effective in guiding the mind of the purchaser to your goal.

The fourth step, decision, is the result of selection and is reached after the mind of the purchaser has been satisfied regarding quality and service, either by his own or by the suggestion and direction of advertising and promotional campaigns. If the "order taker" is present, or if convenient methods are furnished the fifth step, action, is quick and definite. Some of our most successful businesses do not consider the personal order taker necessary. They depend on providing convenient methods in the form of handy, simple order blanks for the transformation of the mental sale into an active sale.

Many sales have been completed in the mind of the purchaser and never reached the producer because convenient methods were not provided.

I believe the messenger boy, or order taking phase of salesmanship is well taken care of in the crushed stone business, but I know the element of producing and urging mental sales is sadly deficient.

I fear the last element of a sale, satisfaction, is somewhat overlooked.

My own ten-year experience as an order taker bears out my conclusion as to salesmanship in the crushed stone business. The weak spot is not with the salesman himself, but with the general advertising and promotional policies of the industry.

The crushed stone salesman is sent on the road to sell stone without the assistance of the heavy artillery barrage of advertising from the home office. He drives from place to place calling on commissioners, trustees, contractors and architects actually asking them if they have "sold themselves" any stone. If they have, he takes the evidence, the order, and is tickled to think that he has made a sale. If the man he visits has not sold himself the salesman travels on, ever in search of a man who has.

Salesmanship in crushed stone can be placed on the high plane of efficiency, if the brains of the industry will get busy. This is not possible for a single institution, since we consider it difficult to give the stone of one quarry a personality or a character over the stone of another. It is a cooperative job that should be promoted rather than by the individual.

Crushed Stone has "sold itself." Crushed Stone producers have prospered in spite of themselves rather than because of themselves. New markets have developed themselves rather than being developed by producers.

# Frank Farrington's Business Talks

## *No. 2—Is Your Ambition Asleep?*

**You know what the old fellow at the crossroads said when asked what he and his cronies did to while away the time: "Sometimes we set and think and sometimes we just set."**

**There are business men in that same category.**

**Sometimes their business goes along a definite upward track, on its way to a destination, and sometimes it just goes along, aimed nowhere and likely to get nowhere.**

**Some men are on their way to higher position and some are merely on their way.**

**Some men have hitched their wagons to stars and some have just sat in the seat and looked at the stars and hitched to nothing.**

**Ambition is a great thing.**

**I am not sure but it is the greatest thing there is in its influence upon the success of men.**

**A man without ambition certainly never gets more than what happens to drift his way, and you know how much of a success can be made of picking up nothing but driftwood.**

**A man with ambition is anxious to get ahead, to better himself and his condition, to advance.**

**It is all a matter of trying hard enough.**

**Without ambition it is hard to try at all, let alone try hard enough.**

**If we have no ambition, we don't care.**

**That is all it means to have ambition; it means to want to and to be willing to try to.**

**Men with ambition try and men without ambition do not try, and men who do not even try, never accomplish their wishes.**

**Ambition produces action while wishes produce inaction.**

**Are you ambitious or merely wishful?**

**The ambitious man wants to do more business this year than he did last, whatever business conditions may be, and he is going to try to do more, and he WILL do more, because men who try can accomplish what they set out to accomplish.**

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# For a Working Association

## Crushed Stone Producers Started Some Committees to Formulating Plans for Valuable Activities

"LET'S put on a publicity campaign," said W. H. Hoagland at the recent convention of the National Crushed Stone Association—or words to that effect.

Mr. Hoagland backed up the idea with a lot of good arguments, too, largely from his experience in the National Face Brick Manufacturers Association. For although president of the Marble Cliff Quarries Company of Columbus, Ohio, he is also interested in the brick business.

And after considerable argument and quite general discussion, the idea looked good enough to justify the authorization of a committee to formulate plans and present to the next annual meeting.

While the general sentiment was that stone is able to speak for itself, without advertising, the fact remained that other materials are being used, regardless; hence the repetition of Mr. Hoagland's sentiment, "Let's put on a publicity campaign."

It may not involve the expenditure of a million dollars, such as the brick people spent; though it was reported that this brought such excellent results that the sum is to be duplicated. But at any rate it is hoped that the committee will recommend the spending of at least a fraction of a cent on the members' production for the purpose of telling the world that crushed stone is the material to use.

That was on the first day of the convention. And then on the third day another idea was presented for investigation between this time and the next convention—by A. Acton Hall, of Piqua, Ohio—and it took so well that the same committee was instructed to look into the matter, the motion this time carrying an appropriation for necessary evpenses to do the work properly.

Vice-President Eames Presided

The proposition, reduced to its simplest terms, was this: Very likely the stone industry is missing a lot of sales opportunities by not knowing all the possibilities of its material. Stone, for instance, may be a good conditioner for cattle. It may has possibilities for human food. It perhaps can be used in place of higher priced minerals in some of the arts and sciences. But the association ought

to have exact information on all these things.

So what it wants, if the committee appointed decides it ought to have it, is a research department, to work either independently or in connection with governmental or other agencies, to find out all the possibilities of stone and develop them to the point of efficiency of the packing industry, which loses nothing but the squeal of the pig.

Take for instance, just the one item of agricultural limestone. It was once a waste product, one producer being honest enough to acknowledge that he could remember the time when he had paid to have it hauled away. Now, thanks to the researches of the agricultural experiment stations, rather than of the producers themselves, this is growing to be one of the big branches of the business. No doubt there are others which have never yet been thought of, and which technical experts employed by the association could develop.

So that's that!

And again, the officers promised to have a program all doped out in advance before the next convention, instead of letting the sessions ramble along at their own sweet will, as has been the way with this association heretofore. To this end the members were called upon to say just what kind of a program they would like to have, and responded to the invitation quite promptly. The impromptu style of session which has heretofore prevailed has been productive of some mighty helpful discussion, and there is no disposition to resort to the plan of having every step of the way mapped out in advance; but some of the high spots can be charted and the pioneers of discussion selected and given time to familiarize themselves with the lay of the land.

The convention expressed itself as wanting the program for the most part devoted to actual quarry operations and trade practices. This was expressed cautiously, in view of the

Dawney M. Gray of the Louisville Cement Co.

Secretary Sandles was on the spot when needed

John J. Sloan of the Wisconsin Granite Co.

fact that much of the time of the present sessions was devoted to expositions by representatives of material and machinery manufacturers. It was good stuff they gave, too, and mostly right to the point, and was appreciated to the extent that it was voted to allow manufacturers and material men to become associate members of the association. But the stone men went to work with them as a part of the general industry rather than as a class by themselves.

One of these men caught fully the spirit of the meeting and made a hit with his audience. He was O. A. White, of the Fate-Foot-Heath Company, Plymouth, Ohio. Throwing away his prepared talk, he discarded all mention of Plymouth locomotives and launched into a flight of impromptu oratory, making the whole convention beam and glow for about ten minutes. In fact, it can truthfully be said that his speech was one of the very bright spots of the whole series of meetings, for he combined humor with serious argument in an admirable way. His discourse carried the quarrying industry much further back in point of time than we are accustomed to view it. He characterized it as the oldest human industry, the first work to which prehistoric man set his hand. All this was rather different from the address that Mr. White had intended giving; but the press of convention work which made his appearance on Tuesday impossible and which gave him only a short time on Wednesday, caused him to content himself with an etemporaneous effort—but a very good one. He complimented the stone men on their good organization, their energetic activity, and the manner in which they are contributing to important movements for the public good. Mr. White's address was capped with the story of the bull and the bee and the moral that it pointed so well—"Do It Now." Needless to say Mr. White drew hearty applause.

But we are getting far ahead of our story. We should have mentioned before this the regretted absence of President E. J. Krause of St. Louis, who was kept away by the death of his daughter in Berlin. At his request, however, his complimentary dinner to the stone men at the famous Terrace Garden, on the first evening

John Rice, Easton, Pa.

of the convention, was carried out according to the original plan, even in his absence, and proved one of the most enjoyable events of its kind. At the closing session the convention resolved:

That it desired to convey to its president, Mr. E. J. Krause, the profound sympathy of the Association in his recent bereavement in the loss of his daughter, not only does each member hold a realizing sense of the loss sustained by Mr. Krause, but we are keenly aware of the loss sustained by this association in being thus deprived of the energetic and enthusiastic presence of its president; that the secretary be instructed to express to Mr. Krause our hearty appreciation of his thoughtful courtesy and hospitality in tendering to us an excellent dinner in delightful surroundings, and that as his guests we were not unmindful that even the grief that is his at this time did not prevent his continued thought for adding to that extent to the pleasure of this convention.

Appreciation of the work done by the Chicago stone men was also fittingly expressed, for their efforts added much to the comfort and enjoyment of the delegates. The duty of the members to enlarge their sphere of usefulness of the organization was also emphasized in the following resolution:

O. C. (Doc) Hubbard of Milwaukee

Allan Patterson, Lima, Ohio

That insamuch as the individual members of this Association have distinctly benefited by the work and activity of the Association and by the cameradiere and good fellowship developed by the Conventions, and as the entire industry has profited because of the activity of this Association, it is properly incumbent upon each member to enlarge the sphere of the beneficial influence of this Association, by not only giving to it their moral and financial support, but that further, each individual member use his influence to enlarge the Association by bringing to it new members, making the Association thereby more truly National, with greater possibilities for effective service to its individual members and to the Nation itself.

As to freight rates, and transportation matters in general, the convention did some talking but took no definite action, owing to the fact that one hearing was then in progress before the Interstate Commerce Commission and another was to come up in a few days. After the adjournment of the convention, however, the executive committee met and drafted the following letter to the Interstate Commerce Commission:

At a meeting of the Executive Committee of the National Crushed Stone

James Savage,
Buffalo

O. A. White,
Plymouth, Ohio

R. W. Scherer,
Milwaukee

F. W. Schmidt,
Morristown, N. J.

H. E. Bair,
Toledo, Ohio

Association held during their convention in Chicago on January 18, earnest consideration was given to the matter of appearing before your Commission January 24-25 in connection with hearings in docket 132-3 of freight rates.

While it is believed that crushed stone bears an unfair proportion of the general transportation burden, it is further believed that the time is not opportune tc make any further protest. However, the Executive Committee desires to go on record protesting vigorously against any preference in the way of rates to any competitive material such as Sand, Gravel or Slag, which may exist or grow out of the hearings.

Mr. S. R. Russell of the DuPont Powder Company, next read a 20-minute paper on explosives, going into the nature of the various kinds and the results that are accomplished by their use. He described the various ways in which blasting is done, the characteristics of all the explosives, and the way in which these particular characteristics are adapted to particular problems. Mr. Russell's paper was very thorough and covered, in the limited time allowed, a large amount of ground.

Mr. N. G. Greensfelder, of the Hercules Powder Company, read a very interesting paper on the use of modern explosives. He introduced the subject by references to ancient methods of quaarying and drew interesting comparisons between the terribly laborious work of hewing out stones and the comparatively easy modern method. He illustrated his talk with pictures showing views of the Hercules plant in California and also the making of the largest blast ever set off. The film was very interesting and a number of those present requested that it be run back-

Nearly everyone was at the banquet

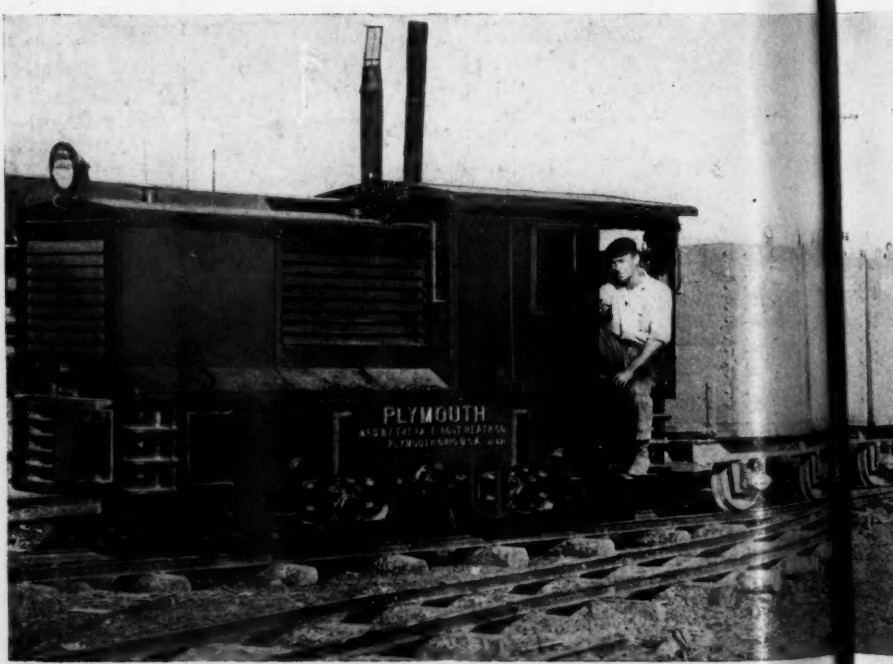
# PLYMOUTH

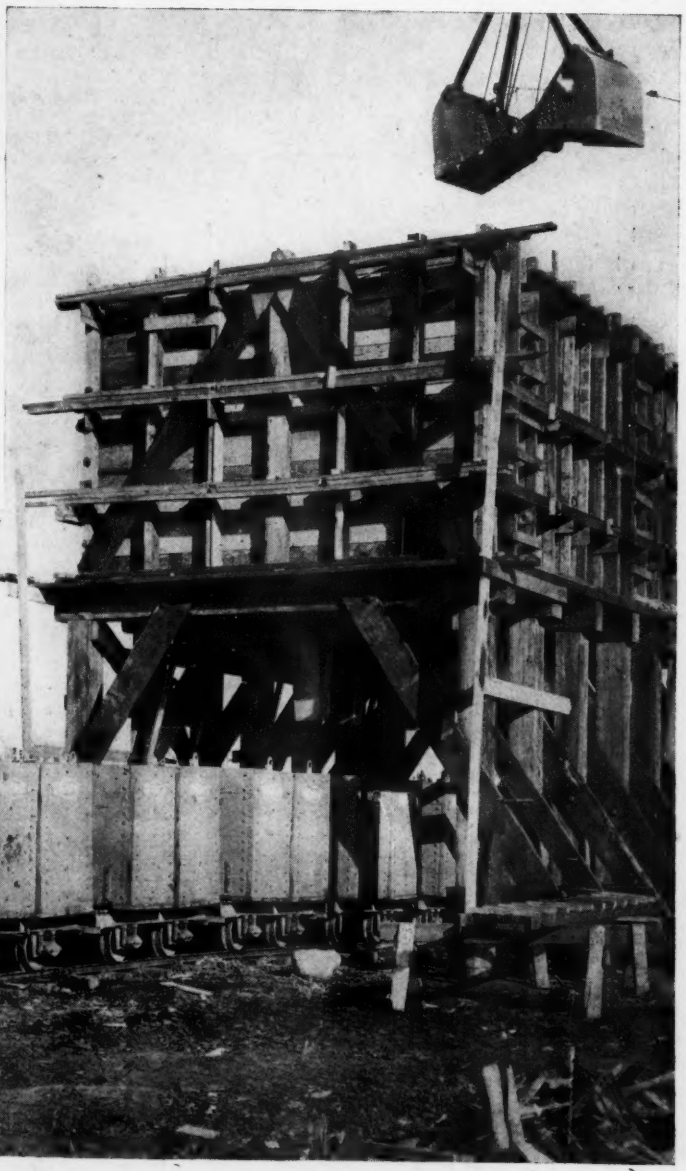
## *Gasoline Locomotives*

THIS PLYMOUTH Gasoline Locomotive is getting ready for its hike down along the New Miller Trunk cement highway, on a section now building by Grant Smith & Co., at Central Lakes, Minn.

This highway, ately miles, will conne with Mesaba Range to Putna superintendent, w ymout handled four tra t load plant, one at mix the ro

**The Fate-Root-Heath Company, Plymout**





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the road.

ward to the point where the blast itself was shown. Only shortage of time prevented this.

Mr. Wm. Warr of the Manhattan Rubber Company read a well written paper on rubber belting, and its proper use in quarries for conveying material and the transmission of power. He spoke of the many ways in which rubber belting could be used and how, by using the wrong kinds of belting, much damage is done. The Manhattan Rubber Company has considerable data on the selection of proper belting and the care that should be taken of belts employed for various kinds of work. Blue prints and other information will be sent upon request.

W. H. Hoagland



George Balfe

Mr. J. J. Urschel of the Woodville Lime Products Company, Woodville, Ohio, spoke on "Knowing Costs is Best Insurance Against Bankruptcy." Mr. Urschel spoke very frankly of quite a number of costs at the Woodville Quarry and told of the way in which records of these costs are kept. He pleaded that the members of the National Association pay more attention to this important matter submitting their costs to the National Association, and thus improve things for all concerned. Mr. Urschel made some interesting comparisons between the price of this product in a number of sections. He showed that in quite a few places, his own among them, costs were pretty well bunched, but in certain other sections there

Assistant Secretary Clark

were wide variations in price which indicate that some producers were ignorant of this true cost of producing material. A little diversion was created at this and later sessions as the various producers acknowledged some of the high and low prices to which Mr. Urschel had directed attention.

Mr. Hoy, of the Hadfield-Penfield Steel Company, makers of the American Gas-o-motive, delivered one of the shortest talks of the whole convention but one that, judging by the applause, met with the hearty approval of those present. Mr. Hoy did not attempt any lengthy or detailed explanation of the company's products, but contented himself with a few general remarks, which, as already said, were very well received.

The gentlemen from the Easton Car Company showed a number of features that belong exclusively to the Easton car. He described to good advantage the side dumping model which permits speedy dumping of material with the least wear on the car itself.

The picture of the Brownell Improvement Company of Chicago, showing the use of the Barber-Green Company's equipment, was the contribution of this latter company to the program. The picture showed operations in various parts of the plant and proved quite interesting.

J. H. Schroeder, Davenport, Ia.

As to the new officers, Vice-President Eames presided so successfully in the absence of President Krause that his election to the leadership of the organization followed as a matter of course. Mr. Eames, as everybody knows, is with the New Haven Trap Rock Company, New Haven, Conn. F. W. Schmidt, of the Morris County Crushed Stone Company, Morristown, N. J., was chosen first vice-president, the second vice-presidency going to W. H. Hoagland of the Marble Cliff Quarries Company of Columbus, Ohio. A. J. Sullivan of the Inland Crushed Stone Company, Chicago, succeeds himself as treasurer. John Rice, of Easton, Pa., and L. H. Hawblitz of Toledo, O., was chosen for the executive committee. The secretaryship remains, of course, with A. P. Sandles of Columbus, O., who has so well taken care of the affairs of the office since the beginning of the organization.

The annual banquet was fully up to the high standard set by this organization in the past, and was fully attended, as shown by the photograph shown on page 56.

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Bucyrus Company, South Milwaukee, Wis., with northwestern sales office at 608 Pittock Block, Portland, Oregon, announces the appointment of Mr. A. R. Hance as northwestern sales manager, succeeding Mr. L. T. Russell who has resigned after ten years of service with the company. Mr. Hance has been connected with the sales department of the company in the central and eastern territories for a period of six years and comes to the northwest with a thorough knowledge of the company's product.

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The G. Ittenbach & Co., Indianapolis, Ind., is contemplating the construction of an addition to its stone plant. The building will likely be built in the spring.

# Crushing Plant Engineering

A paper read before the National Crushed Stone Association

By BROWNELL McGREW

of the Allis-Chalmers Company, Milwaukee

The process of producing crushed stone and putting it on the market may be divided roughly into three main groups of activity; quarrying, crushing and selling.

Andrew Carnegie, when asked which of the three economic factors—capital, labor or materials—he considered the most important, answered: "Which is the most important leg of a three-legged stool?"

Mr. Carnegie's remark applies very aptly to the three divisions of crushed stone production. If one leg is short, you have at the best a wobbly stool, and a two-legged stool is no stool at all.

Between the primary operation of quarrying and the final one of marketing, stands the crushing plant,—the neck of the bottle through which the commodity must be poured to prepare it for the market.

There is probably no branch of industrial engineering in which the individual judgment and common sense of the engineer are of greater importance than in the crushed stone industry.

Naturally, there is considerable difference of opinion as to what constitutes "common sense"; it is not surprising therefore, that there is considerable difference of opinion as to what constitutes good crushing plant engineering, particularly in view of the fact that there is no fixed standard or criterion by which to compare one crushing plant with another.

Furthermore, crushing practice has gone forward by leaps and bounds in the past two decades, and what was good engineering in the light of yesterday's experience may not be good engineering in the light of our present day knowledge.

There are, however, a few sound basic principles upon which all successful engineering must be based, a few standards that any efficient plant must measure up to.

The first of these—effectiveness—is the most important measuring rod that can be applied to an industrial plant of any kind.

Will the plant do what it was designed to do?

As regards the crushing plant, effectiveness bears directly upon capacity for one thing, and here we have one of the greatest stumbling blocks for the unwary designer.

Adequate capacity must be provided for throughout the plant—in the main breaker, the secondaries, screens, elevators, hoists.

Not only must the plant be capable of crushing a certain tonnage in a given time; it must also be capable of reducing the stone to marketable sizes and properly separating, gradi. and perhaps remixing certain sizes.

The demand for clean stone, properly graded, is becoming more and more insistent, and the wise operator is putting his plant in shape to meet this demand.

Likewise there is an ever-increasing demand for the smaller sizes of crushed stone for reinforced concret work, highway binder, etc., and the modern commercial plant, to be fully effective, must be prepared to deliver these grades in large quantities.

Ordinarily when plant capacity is mentioned, the mind jumps instantly to a consideration of the proper size of primary breaker, for there is probably no one factor in a crushing plant that has so far-reaching an effect from a dollars and cents standpoint, as this machine.

Aside from the element of capacity the size and type of primary crusher influences directly practically every unit in the plant that follows it, and frequently the disposition of these units.

Looking at it from the plant side, the most economical breaker is the one that will deliver to it the smallest product—and a product that is relatively free from slabs and fines.

Looking at it from the quarry side, the most effective crusher is the one that will cut to a minimum the cost of drilling and shooting.

Herein lies the chief advantage of the big receiving opening.

Mr. Edison's line of reasoning when he first developed the Edison roll crusher was as follows: "A pound of

Brownell McGrew

coal and a pound of dynamite have approximately the same potential energy value, but a pound of dynamite costs from eighty to one hundred times as much as a pound of coal—therefore, why not do as much of the work as possible with coal rather than with dynamite?"

The development of the large crusher and the introduction of the steam shovel into quarry operation are without doubt the two most important improvements that have been made since the inception of the industry, and it is safe to say that development along these lines has not yet reached its limit.

On the other hand, it should be remembered that for any given set of conditions there is an economical limit to the size of the primary crusher.

Figuratively speaking, one must stand in the middle of the proposition and look both ways.

On the one side we have the very enticing possibility of making a substantial cut in the cost of quarrying; on the other, we are checked by the factors of first cost, power, upkeep, ratio of reduction, etc.

The relative effectiveness of a plant will also depend to a very considerable extent upon its location.

Primarily this involves the problem of quarry transportation of getting the stone from pit to plant as cheaply as possible.

Second only to this in importance is the problem of getting the stone away from the plant and of providing ample storage room for both empty and loaded cars.

It is frequently the case that a location which is advantageous from a standpoint of transportation in the quarry will complicate the handling of the railroad cars, even to the extent of necessitating the use of a locomotive to do the loading.

You will, of course, wish to avoid this when possible, nevertheless it should be remembered that the ton mile cost of handling the finished product in railroad cars will be very much lower than that of making long hauls in the quarry.

Furthermore, in large commercial operations the locomotive is sometimes necessary—or at least very expeditious—for loading mixed sizes and cutting out required types and capacities of cars needed to fill certain orders.

Effectiveness is also the measure of a plant's ability to operate continuously throughout the season with a minimum of breakdowns or delays from other causes.

Rugged and dependable machinery is the best safeguard against break down, and a simple layout, comprising the absolute minimum number of units necessary to do the work is the best safeguard against minor delays and accidents.

A principle of crushing plant design second only in importance to effectiveness is that of flexibility, which, in its broadest sense, is the measure of the plant's ability to meet a varying market demand.

Those of you who are operating plants which do not have this element of flexibility have probably experienced more than once the necessity of turning down orders for certain grades of material, while at the same time you were overstocked on other sizes.

I have mentioned before the increasing demand for the smaller sizes of stone, and the necessity of equipping the plant to take care of this demand.

I do not propose in this paper to discuss the various types of fine crushers and their relative merits, but I do wish to lay special emphasis upon their value to the operator.

Fine crushing machines should be so located in the plant that any of the coarser sizes which may be temporarily unmarketable may be readily returned to them for recrushing.

The value of the closed circuit principle in crushing plant design is so well known, and the principle is so generally adhered to, that it would scarcely seem necessary to mention it here.

Nevertheless there are still a rather surprising number of plants in operation which are wide open on the finishing end.

This is most frequently found to be the case in plants where the product of the secondary crushers is returned to the scalping screens for reseparation, making a closed circuit at this point and sending on to the finished screens all material under the maximum size produced.

This is good practice in a straight ballast plant but it is hardly excusable in a general commercial mill as all adjustments in product must be made by changing sections in the scalping screens, whereas in the closed circuit plant changes in product can be made while the mill is in full operation.

Most of you, no doubt, are equipped in some way or other to stock such grades as may be unsalable at the time they are made.

The stock pile is coming to be a very necessary adjunct to the commercial crushing plant as there seems to be no other method of adequately taking care of a fluctuating market.

It is but natural, though, that the quarryman should not be inclined to look with favor upon the stocking of crushed stone—not only because of the expense of re-handling, but because stone in the stock pile represents dead capital.

It is not possible in the light of our present knowledge to put up a crushing plant that will entirely eliminate stocking but it is practicable to so equip the plant that stocking of the larger sizes will be unnecessary when there is a heavy demand for the smaller grades.

The introduction of the electric motor in the crushing plant has been a great boon to plant flexibility; in fact I do not believe I am going too far when I say no other one factor approaches it in importance.

The freedom which it allows in the disposition of the various plant units was impossible under the older system of centralized drive.

Nowadays the designer can arrange this machinery with very little thought of complications in power transmission by adopting the group or individual drive—thus sidestepping one of the greatest checkreins upon flexibilty.

Broadly speaking, simplicity in plant design is attained in two ways: first, by reducing the number of units to a minimum and, second, by simplifying the arrangement of these units and their auxiliary equipment.

A crushing plant is not merely an aggregation of machines—it is in itself a machine—dependent upon the efficient operation of its parts for its success as a whole.

Every part added to a machine—and, likewise, every machine added to a plant, entails additional power and upkeep expense, and other things being equal, the plant with a few large units can be operated more economically than the one which is made up of a large number of small units.

I would advocate that this principle be carried out at the sacrifice of flexibility, nor would I wish to set it up in opposition to the independent two unit plant, which, in my opinion, constitutes a great feature of modern high capacity plant design.

There is a happy medium which good judgment will point out to the designer for each particular proposition.

Compactness will go hand in hand with simple plant design; its greatest value to the quarry operator lies in the saving of labor required to run the plant—and in the first cost of the buildings that house it.

A plant that is scattered all over a ten acre lot is naturally going to require a larger operating crew than one that is housed in one building or in two buildings closely adjoining each other.

Like all good things, though, compactness can be carried too far. Accessibility—which is an oft neglected but none the less valuable feature—should never be sacrificed for the sake of obtaining a compact layout or cutting down the size of the buildings.

It would be a very good thing if every man responsible for a "sardine can" plant design could be made to get out and make a few repairs in it on a dark night.

There would certainly be some startling improvements along the lines of accessibility in their future work.

The screen house should be large enough to provide plenty of room

around the screens—where screens are arranged in battery, room should be allowed for getting at each unit from at least one side.

Elevator pits should be made large and be well lighted, and it is best where possible to arrange for access to the pit from the rear so that the men who have to enter it will not be in danger of being caught in the buckets or struck by falling stones.

Safe runways and stairs should be provided for getting at overhead shafting; only an exceptional man will pay the proper attention to inspection and lubrication when this work involves undue fatigue or personal danger.

Much can be done in the average crushing plant to promote this feature of accessibility—not only as regards repairs, but also with respect to operation.

I have in mind a small plant in the East that was originally designed with the incline directly over the top of the primary crusher and at such a height as to prevent free access for feeding. This plant was equipped with a No. 6 primary machine.

After operating under this handicap for several seasons the incline was shifted to one side and raised so that the feeders were unhampered in their work—and the average output of the plant was increased fifty tons per day.

The question of selecting the right type of crusher is one of the most widely debated questions among quarrymen and engineers.

It is not surprising that this should be so.

My own observations lead me to believe that there have been more costly mistakes made in choosing the type of crusher to be used than in any other branch of crushing plant design.

I believe we all have a very human tendency to become unduly enthusiastic over the merits of that particular type whose performance has been most favorable in our own personal experience.

Also, the introduction of a new type, or its development in large sizes invariably instigates what might be called a short period of "Faddism."

I have been fortunate enough during my own erecting and operating experience to come in contact with all of the three general types of main breakers and I will have to confess that, at one time and another, each of the three was a heavy favorite with me.

The truth of the matter is this:—strictly speaking there is no such thing as a universal crusher. I believe you will all agree with me that the gyratory more nearly approaches this definition than any of the other types, but even the gyratory has its limitations.

The man who is going to put his money into a new crusher will do well to make a careful study of the characteristics of all of them—to check these characteristics against the material to be crushed, the product desired, and the capacity wanted.

Only after such a comparison will he be qualified to make an intelligent selection of the right type for his particular work.

One phase of crushing plant design that deserves more attention than is generally given it is a study of the flow sheet.

We all know that no two classes of rock have the same fracture and that for this reason a flow sheet can only be an approximation of what will actually take place in the plant.

But even this approximation is vastly better than a rough guess, and anything that will help to eliminate guesswork is most certainly a step in the right direction.

The industry in general is in need of more scientific plant design—of a discarding of many of the old rule-of-thumb methods in favor of more systematic methods.

The older and more experienced engineers carry in their memory certain more or less clearly formulated rules and data which they are able to apply offhand to crushing plant problems as they arise; but the coming engineer is going to need more than that; he is going to need these rules and data and the results of the older engineer's experience in printed form; in order that he may have a starting point from which to carry on.

Such rules as there are to guide the crushing engineer must necessarily be empirical in character, and to be safe they must be based upon data which for any particular formula may take years to compile.

This data must come chiefly from one source—from the operator—and everything that can be done to promote closer cooperation between the quarryman, the machinery manufac-

turer, and the engineer, for the purpose of furthering our present day knowledge of crushing stone cannot help but benefit the industry.

What I have designated as *scientific* design should not be confused with *conservative* design.

It is safe to say that ninety-five out of every hundred plants represent what might be called conservative design.

Conservatism consists largely in profiting by your own and the other fellow's mistakes, or in a repetition of your own and the other fellow's successes.

Scientific principles will be more in the nature of a guiding light for the progressive quarryman and engineer—the men who are on the alert to try something new.

And in conclusion I want to say that to those of you quarrymen who, like Steve Brodie, were willing to take a chance; to the engineer who worked and worried to make his dream come true; and to the machinery manufacturer who put his faith and his money into new and progressive ventures in the way of larger and improved equipment, the crushed stone industry owes much of its truly remarkable growth.

## Grates for Lime Manufacturers

The Kramer Bros. Foundry Co., Dayton, O., are anxious to have lime manufacturers investigate the merits of the McGinty grate which they are manufacturing.

Inexpensive fuel can be used, due to the greater air area embodied in McGinty grates. They are also constructed to withstand intensive heat without warping. They are made to meet the requirements of kiln and hydrating practice.

McGinty grates permit one to clean fires with doors closed—it is a shaking, sifting and dumping grate.

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The Lisbon Agricultural Lime Company has been organized at Lisbon, Ohio, with a capital of $25,000. Organizers: G. E. Romano, A. Delorenzo, M. Glara, M. A. Pizzi, H. C. Poulson.

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The Union Portland Cement Corporation has been incorporated at Los Angeles, Cal., with a capital stock of $1,500,000; shares 15,000 at $100 each; subscribed, $900.

Mr. C. N. Leet, Vice-President, Milwaukee Locomotive Mfg. Co., Milwaukee, Wis.

Mr. T. J. Moore, Chicago Sales Manager Thomas Elevator Co., Chicago, Ill.

# Road School at Purdue

## Indiana County Highway Superintendents Study Own Game for Week

The Eighth Annual Road School, conducted under the direction of the School of Civil Engineering of Purdue University, was on a par with most Indiana projects, well organized and productive of results. The various sessions at the University in Lafayette were attended by the members of the Indiana County Highway Superintendents' Association, the Indiana County Surveyors and County Engineers Association, and the City Street Commissioners Association of the State of Indiana. Members of the County Highway Superintendents' Association are required by law to attend the school before undertaking the year's work. Mr. F. W. Connell, Chairman of the Legislative Committee of the superintendents organization was largely responsible for the enactment of this desirable law, passed by the last Legislature.

The course of lectures extended over the week of January 23 to 28 with morning, afternoon and evening periods. The topics included every one on which discussions would be beneficial to the men attending, the lecturers were well known men connected with highway work in Indiana or neighboring states. The program for Tuesday, January 24, was typical of the quality of those for the other days of the work. On this day materials were more particularly discussed than at any other time.

Mr. David C. Sheetz presided over the morning period. He introduced as the first speaker Mr. A. H. Hinkle, Chief Engineer of Maintenance of the Indiana State Highway Commission. Mr. Hinkle's talk was on the maintenance and reconstruction of roads. He was followed by Mr. R. C. Yeoman, extension engineer of the Indiana Sand and Gravel Producers' Association.

Mr. Yeoman went very thoroughly into the work of gravel production, particularly its hazards and the difficulties that the producers often have to meet. He reviewed the history of the use of gravel in Indiana, going back to the time when nothing but bank or pit run was used, through the development of the plants producing clean, graded material, up to the war and the hardships it imposed upon gravel producers. He referred to the only remaining result of wartime conditions, the high freight rates.

Mr. Yeoman spoke of the common conception, or misconception, that the layman has of the sand and gravel industry. Many have entered the business blindly, only to be disillusioned after a costly failure. With a little imagination, the casual visitor at a plant sees the streams of gravel turning into gold, and sometimes goes into the business which looks so easy. Many have pursued the vain hope only to learn that they could not handle the job, others managed to flounder through where the railroad rate was ridiculously out of line. Mr. Yeoman then referred to a number of specific cases where road contractors or others had attempted the operation of private pits and found that they could not be worked profitably. There were the usual difficulties. Deposits played out quickly, production was unbalanced by runs of material that deviated from the proportions required, clay was encountered, and over and above all these was the fact that the men conducting the work were inexperienced. In these and other important ways Mr. Yeoman put the gravel producers' case squarely before his audience.

Mr. E. B. Taylor, of the Mid-West Crushed Stone Quarries Company, Greencasle, Ind., performed practically the same office for the crushed stone producers. He talked the A B C's of the industry and in such a clear concise way that we have no doubt all who heard him benefitted and now have a better appreciation of the difficulties that the quarry man often encounters. After delivering his speech, Mr. Taylor asked for questions from the audience. A number were asked and immediately answered. We believe the stone men's case was advanced considerably by Mr. Taylor's efforts.

Other speakers on Tuesday were Mr. Frank Rogers, State Highway Commissioner of Michigan; Mr. Fred Kellam, Chief of the bureau of tests of the Indiana State Highway Commission; Mr. M. T. Calef, Highway Contractor; Mr. Chas. E. Magley, Highway Superintendent; Mr. Curtis Lattimer, Highway Engineer; Mr. Marshall Moody, Highway Superintendent.

# Will Promote Agstone

## Cleveland Man Made President of Association at Annual Meeting

At the annual meeting of the National Agricultural Limestone Association held at Columbus, Ohio, January 10 and 11, a new luminary appeared in the Agstone heavens and proved to be of such force and brilliance that he was forthwith elected president to guide the destinies of the organization during the coming year.

He is Edgar M. Lamkin, of the Kelley Island Lime and Transport Company of Cleveland, Ohio. He took charge of the agricultural limestone department of that company about a year ago and has proven so successful in developing that department that he was recognized as the man to push the association work.

With his own company he has paid particular attention to the selling end of the business, systematizing the methods of selling and endeavoring to develop his salesmen into something more than mere order takers. It is to be expected that under his administration Agstone will occupy a bigger space on the map than it did before, and its benefits widely appreciated by the farmers.

At a preliminary meeting of the board of directors on the first day, the budget for 1922 activities of the association was absolutely guaranteed, so that when the convention assembled it was in a happy state of mind and ready to plan for the future.

The complete list of officers as chosen is as follows: E. M. Lamkin, Kelley Island Lime and Transport Company, Cleveland, Ohio, president; R. J. Fuller, Columbia Products Company, Cleveland, Ohio, vice-president; W. H. Hoagland, Marble Cliff Quarries Company, Columbus, Ohio, treasurer. A. P. Sandles was retained as secretary and Claude L. Clark as assistant secretary.

The board of directors consists of J. C. King, Carbon Limestone Company, Youngstown, Ohio, chairman; Harry Brandon, Ohio Marble Company, Piqua, Ohio; Clyde Clavin, Bessemer Limestone and Cement Company, Youngstown, Ohio; Frank Colgan, Colgan Limestone Products Company, Columbus, Ohio; W. M. Brown, France Stone Company, Toledo, Ohio; Thos. McCroskey, American Limestone Company, Knoxville, Tenn.; E. M. Lamkin, R. J. Fuller and W. H. Hoagland. Two more directors are yet to be selected, these probably being chosen from other states bordering on Ohio.

Edgar M. Lamkin

The general state of the industry as brought out at the convention was a very hopeful one, as the farmer seems to be learning rapidly the value of agricultural limestone, either alone or in connection with commercial fertilizers. It was brought out that a short time ago the farmer was indifferent about testing his soil, but that now he is anxious to have tests made so that he can determine how to produce the best yield. Soil testing was stated as one of the best salesmen for agricultural limestone.

The secretary was instructed to appear at a hearing before the Interstate Commerce Commission at Washington on January 28, regarding a general reduction in freight rates on agricultural limestone.

A dinner was tendered the association by the Marble Cliff Quarries Company of Columbus, at which four members of the faculty of Ohio State University were present and talked on various phases of the agricultural limestone question. They strongly urged the matter of soil testing and also thought the producers ought to promote the idea of storage bins so

that Agstone can be distributed satisfactorily at the time it is needed.

F. A. Sebring, of the Ohio State Bureau of Feeds and Fertilizers, talked on agricultural limestone also, and said that he was proud to say that the past year he had found no violations of the state laws by any member of this association. He said he was personally interested in seeing all producers become members of the association, as he believed its policies were such that, if followed, would make producers less liable to violations of the laws.

The newly elected president made an address at the dinner, showing the members that it was his determined desire to see that under his direction the association should accomplish much during his term of office and promised to conduct matters in such a way that members would feel on the expiration of his term that many things of importance had been successfully accomplished. He discussed the advisability of having directors' meetings at frequent intervals during the year, with at least three or four open meetings at which all members would be invited to attend.

## Illinois Meeting

On January 5, the executive committee of the Illinois Concrete Aggregate Association, held a meeting in Chicago. They discussed a number of question of importance to Illinois gravel producers. One of these was the question of freight rates. The association decided to have a representative present in Washington at the hearing of the National Association against rates on sand and gravel. Mr. B. H. Atwood, president of the association, was in Washington, January 16, for this purpose.

Mention was made of the effort that is being made to work out the best possible cost accounting method. This is a feature of the organization's work that has been given considerable attention in the past, and from which the membership has derived considerable benefit.

The President of the Association in conversation with the state highway superintendent a short time ago, learned that a plan is being worked out to accomplish a better distribution of sand and gravel.

Shortly after this meeting Mr. Pierce, secretary of the association, started on a trip around the State, meeting producers at various points and discussing with them the problems of the association.

## Third of Billion for Roads

### This Amount Now Apportioned to the Various States by Government

The total Federal apportionment now in force for road building is a little more than a third of a billion dollars. The figures by states, including total apportionment under new and old acts are as follows:

| | |
|---|---|
| Alabama | $ 7,329,973.25 |
| Arizona | 4,824,633.13 |
| Arkansas | 5,874,071.67 |
| California | 10,846,453.10 |
| Colorado | 6,121,239.83 |
| Connecticut | 2,170,222.48 |
| Delaware | 813,279.83 |
| Florida | 4,036,938.17 |
| Georgia | 9,405,536.20 |
| Idaho | 4,298,925.54 |
| Illinois | 15,270,548.04 |
| Indiana | 9,374,148.02 |
| Iowa | 10,042,215.88 |
| Kansas | 9,997,590.58 |
| Kentucky | 6,787,243.47 |
| Louisiana | 4,739,514.21 |
| Maine | 3,341,123.82 |
| Maryland | 3,031,378.08 |
| Massachusetts | 5,148,741.13 |
| Michigan | 10,210,827.98 |
| Minnesota | 9,938,980.09 |
| Mississippi | 6,246,448.51 |
| Missouri | 11,770,204.33 |
| Montana | 7,045,713.13 |
| Nebraska | 7,447,951.16 |
| Nevada | 4,480,712.96 |
| New Hampshire | 1,508,713.99 |
| New Jersey | 4,208,169.97 |
| New Mexico | 5,579,617.95 |
| New York | 17,385,249.64 |
| North Carolina | 7,980,024.58 |
| North Dakota | 5,387,202.12 |
| Ohio | 13,025,951.76 |
| Oklahoma | 8,090,585.04 |
| Oregon | 5,514,842.16 |
| Pennsylvania | 16,031,598.26 |
| Rhode Island | 1,006,791.13 |
| South Carolina | 5,007,854.84 |
| South Dakota | 5,656,943.35 |
| Tennessee | 7,875,830.22 |
| Texas | 20,525,577.18 |
| Utah | 3,966,623.59 |
| Vermont | 1,607,728.73 |
| Virginia | 6,908,558.75 |
| Washington | 5,075,385.60 |
| West Virginia | 3,724,864.22 |
| Wisconsin | 8,899,096.53 |
| Wyoming | 4,313,175.80 |
| Total | $339,875,000.00 |

The Kanawah Sand Company has been organized at Parkersburg, W. Va., with a capital of $50,000, by C. S. Pearcy, W. F. Hickman, H. B. Dodge, J. O. Mead of Parkersburg and E. M. Pearcy of Clarksburg.

# Had Perfect Attendance

## Indiana Stone Producers All Were Present at Their Convention

On Tuesday, January 17, during the convention of the National Crushed Stone Association at Chicago, the Indiana Crushed Stone Association held its annual meeting. This meeting was unique in the fact that every member of the association was present. When one considers that it must have been quite difficult for a number of producers to get away from home, this perfect attendance shows most significantly the spirit that is making the Indiana Crushed Stone Association the power that it is.

One of the first items of business was the election of officers for the ensuing year. The following were elected: President, Chas. N. Hodgin, Kokomo Stone Co., -Kokomo; vice president, Bernard J. McNulty, Lehigh Lime Co., Chicago; treasurer, B. G. Pogue, Spencer Stone Co., Indianapolis; secretary, F. W. Connell, Indianapolis.

The executive committee includes E. B. Taylor, Midwestern Stone Quarries Co., Greencastle; L. H. Hawblitz, France Stone Co., Toledo, Ohio; J. E. Baney, Lake County Stone Co., Kentland; Geo. Balfe, Monon Stone Co., Monon; J. E. Pogue, Spencer Stone Co., Indianapolis.

Besides being a meeting of 100% of the membership, the gathering had other notable phases. Chief among these was the enthusiasm that was displayed. During the several hours the membership spent at really constructive arguments, many producer problems and difficulties were discussed and in a number of cases satisfactorily settled.

The big event of the meeting was the discussion on the program of the eighth annual Road School conducted at Purdue University, under the direction of the School of Civil Engineering, in cooperation with the Indiana State Highway Commission, and the Indiana County Highway Superintendents Association, the Indiana County Surveyors, and County Engineers Association, and the City Street Paving Association of Indiana. Many road contractors are required by law to attend this school. All expenses are defrayed and the State gains very distinctly by this move, in that the men who are in charge of road construction are made more fit to perform their duties, and to give to the people of the State roads that will repay in service the money that has been put into same.

Mr. Connell, secretary of the Indiana Crushed Stone Association, is chairman of the association for the committee, and he happens also to be chairman of the legislative committee of the County Highway Superintendents Association, and he is therefore quite active both in the development of the School's comprehensive program and in the securing of needed legislation to make the school as useful to the State as possible.

The members of the Association talked at considerable length of the various uses of crushed stone and the question of the approved specifications. Water bound and bituminous macadam also furnished topics for the general expression of opinion by the members present. Freight rates, too, came in for a considerable bit of attention.

Secretary F. W. Connell

# Indiana Gravel Men Meet

## Hold Important Conference on January 10 and 11

The Indiana Sand and Gravel Producers Association held a convention January 10th and 11th at the Claypool Hotel, in Indianapolis. This was the seventh annual meeting of the Association.

Sessions were opened by a comprehensive review of the year's work by Mr. M. A. Neville, president of the association. In this address, Mr. Neville spoke of the favorable outlook for 1922 and the necessity for better co-operation to get the best that the year could give. He touched also on the need of devising more efficient ways of producing sand and gravel. He went over the work of the past year, the freight problems and the dealings with the State Highway Commission.

Mr. R. C. Yeoman, the extension engineer for the association next made his annual report, suggesting activities for 1922, and reviewing those of 1921. Mr. Yeoman talked of specifications and the necessity for adopting higher quality standards now that problems of car storage and limited material supply no longer justify looser specifications.

Mr. Yeoman called attention to the fact that, after a year in which the use of local pit run material was permitted by local and state specifications, officials are convinced of the danger of carrying this practice too far. During 1922 more high class material will be demanded. Inspection of materials at the plant has proven to be a very satisfactory method; while that of inspection on the road has, in many cases, proved very unsatisfactory. The Indiana commission, however, does not feel disposed to spend the money to have all inspections conducted at the plant. Some means will have to be devised that will prevent difficulties arising from inspections on the road.

Next year will very likely see the use of considerable more calcium chloride, refined tar, and asphalts as binders for sand and gravel roads. Emulsified asphalt is the only asphalt preparation that has been used in this state to bind sand and gravel.

Experiments have been conducted during the past few years to determine the value of the use of sand for improving soils. One man who has been working with commercial fertilizers for 22 years has found that he can increase the yield of corn from 45 to 65 bushels per acre by applying sand and humus in a half-and-half mixture, at the rate of 200 or 400 pounds to the acre. This combination seemed to work best in the clayey soils south of Indianapolis.

A. H. Hinkle, maintenance engineer of the Highway Commission gave a talk on "Prepared Gravel for Road Maintenance." His talk was largely technical, although he set out why poor quality of gravel was frequently used on highway maintenance. He declared that the poor railroad service in connection with high freight rates was largely responsible for this situation. He pointed out that oftimes cars of gravel ordered to a waystation would be left on the siding for days while demurrage piled up simply because of a railroad rule that provided that notices of the car's arrival must be addressed to the town in question. He said high freight rates resulted in county commissioners taking the best gravel they could get where no freight had to be paid, and for these reasons, he said, poor quality or at least an unsuitable quality of gravel has been used for road maintenance with the result that good roads often deteriorate. He said that it costs on an average of $650 a mile per year to maintain gravel roads in the state system. There are some 78,000 miles of road in Indiana. Of this amount 22,000 is graveled and 2,000 miles of this is a part of the State Highway System.

Ben H. Petty, highway engineer of Purdue University gave an address on "Survey of Road Material in Indiana." Mr. Petty said that the highway department of Purdue had been engaged in making a survey of suitable road building material in the state. He said samples of material from 78 different sources, including gravel pits and stone quarries, had been tested in the laboratory. "This does not near include all the sources in the state," Mr. Petty said, "but it gives an idea of what the state has. The highway department will continue its testing of materials and when completed this

data will be compiled for the use of county commissioners and others interested in road building material."

Fred Kellam, chief of the bureau of tests of the State Highway Department, spoke at the convention on "Tests for Gravel." He has been working on testing out the various gravels used in state highway roads. He has found that the finer gravels in certain pits are entirely unsuited for certain road purposes, while the larger material from the same pits would be admirable and vice versa. These tests, Mr. Kellam pointed out, would give the highway commission a line on what sort of material to use in given places. Some gravel, it was shown, would not stand up under the wear while sometimes the larger material after being frozen and thawed for a winter or two would be worn away and become mud in rainy weather.

Other talks were made by M. A. Neville, president of the association; G. V. Miller, treasurer; R. C. Yeoman, extension engineer; V. O. Johnston, of Lincoln, Ill., president of the National Association of Sand and Gravel Producers; W. P. Carmichael of St. Louis, Mo., president of the Carmichael Gravel Company of Williamsport, Ind.; Earl Crawford of the highway commission, and E. Guy Sutton of Washington, executive secretary of the national association.

Data concerning freight rates in Indiana and Illinois on sand and gravel to be presented to the Interstate Commerce commission at a hearing January 16 was discussed at the convention.

The convention named the following representatives to go to Washington to attend the hearing of the National Sand and Gravel Association against the railroads for lower freight rates, before the Interstate Commerce Commission: L. R. Witty, Terre Haute; H. E. Neal, Mattoon, Ill.; R. C. Yeoman, Indianapolis; M. A. Neville, Indianapolis.

The following officers of the association were elected: M. A. Neville, Indianapolis, president; George J. Nattekamper, Terre Haute, vice-president; Jesse Shearer, Indianapolis, secretary-treasurer; board of directors, W. S. Baird, Mt. Carmel, Ill.; and H. E. Neal, Mattoon, Ill.

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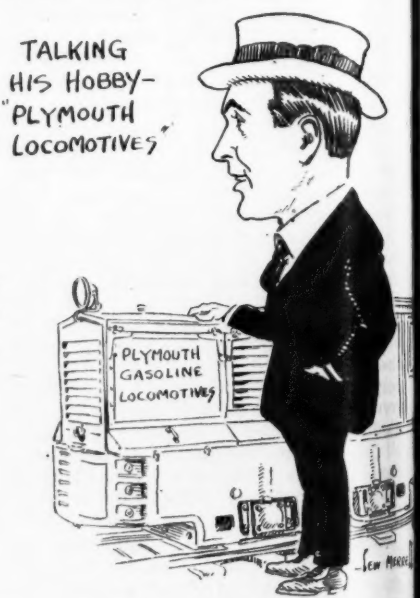
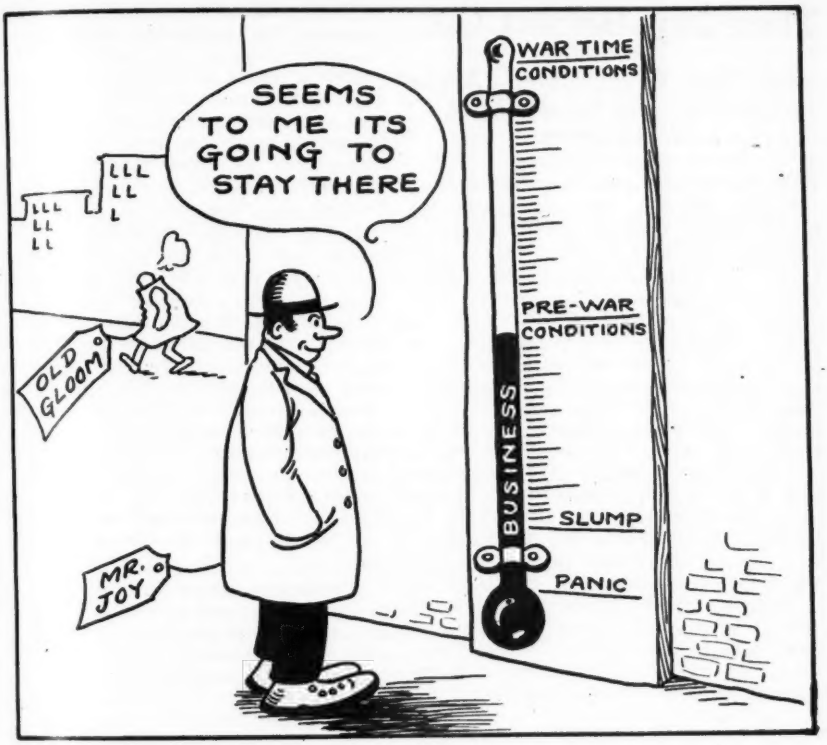
Directors of the Riverside Portland Cement Company, of San Francisco, Cal., announced that an extra dividend of $1.50 a share had been declared and will be payable to stockholders of record January 3.

Mr. Harvey T. Gracely, Advertising Manager Marion Steam Shovel Co., Marion, Ohio



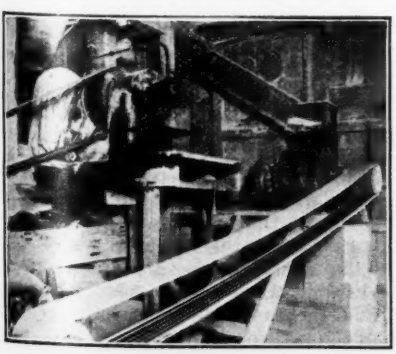

Mr. H. R. Sykes, Treasurer and Sales Ma
The Fate-Root-Heath Co., Plymouth, Oh




From "Kil-o-grams," published by Arnold & Weigel, Woodville, Ohio

## In One Operation

The illustration shows a Gruendler crusher installed in one of the most prominent stone quarries, crushing oversized rock to three-fourth inch and one-quarter inch screenings. This machine can also be adjusted very quickly for crushing for road work or to the fineness of agricultural limestone for fertilizing. Manufactured in sizes to take quarry run rock—crushing to the desired fineness in one operation.



This machine is manufactured by the Gruendler Patent Crusher & Pulverizer Co., St. Louis.

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W. A. Jones Foundry & Machine Co., manufacturers of power transmitting machinery, announce the appointment of Mr. Fred E. Holtz as their Milwaukee district representative. He will assume his new duties immediately, making headquarters in the First National Bank Building. For the past two years Mr. Holtz has been calling on Jones customers in all lines of business throughout the United States and is well qualified to co-operate with their many friends in Milwaukee and vicinity.

# Three Days Before I. C. C.

## Sand and Gravel Men Argue Their Formal Complaint at Washington

By Our Washington Correspondent.

Representatives of the sand and gravel industry from so-called central territory appeared before Interstate Commerce Commission Examiner Hosmer, on January 16, 17, and 18, and submitted evidences which will be used later on by the Commission in its general survey of railroad conditions which was resumed on Monday, January 16. The sand and gravel industry was represented by Alec W. Dann and A. A. McComb for Pennsylvania, Guy C. Baker, C. J. Bollender and C. M. Ault for Ohio, V. O. Johnston and H. E. Neal for Illinois, R. C. Yoeman, L. R. Witty, Mr. Neal and J. P. Johnson, president of the County Surveyors Association of Indiana, for Indiana. Mr. Bollender also represented Michigan. Edwin Brooks, traffic representative of the National Association, gave expert testimony regarding present freight rates on sand and gravel.

The testimony offered by the producers took almost a full three days of Examiner Hosmer's time. When the testimony had been completed, representatives of the railroads asked that the hearing be postponed for one week in order to give them time to digest the testimony. In consequence, the hearing will be resumed on January 25. At that time, the railroads probably will offer some combating testimony. The whole matter, however, will come up for thorough and detailed discussion during the hearings in connection with the survey of the railroad situation which the Commission is now conducting. Examiner Hosmer will simply, and as a formality, make a report to the Commission embodying the testimony of both sides. It will then be opened for discussion as will be done in the case of other specific commodities.

The testimony almost in its entirety was more or less technical and dealt exclusively with the effect of railroad rates on the shipment of pit and quarry products, with which every producer in the country is probably more or less familiar.

The producers, in their testimony, showed the curtailing effect present freight rates are having on the shipment of these products; in a general way how these rates effect the industry, and how development and construction work has been hampered, at least, and in some instances almost entirely stopped.

Although the representatives appearing before Examiner Hosmer spoke only for the so-called central territory, the National Association, through its executive secretary in Washington, E. Guy Sutton, has filed complete and detailed reports with the Commission affecting every section of the country, and it is probable that as a result of these petitions having been filed by Mr. Sutton, the Commission, when it reviews the sand and gravel situation in its relation to freight rates, will take up the question in a manner broad enough to cover the situation throughout the country.

Testimony given by railroad presidents and others at the hearings the commission is conducting in connection with its survey indicate that the railroads will contest any effort to reduce rates on sand, gravel or any other commodity.

Railroad rates cannot be reduced until there has been some modification of railroad wages and railroad labor work agreements, President W. L. Mapother of the Louisville and Nashville railroad told the commission. Everybody desires a reduction, Mr. Mapother said, in transportation charges, even the railroads, but the operation costs must be brought down first if railroads are to survive.

Notwithstanding economies of management and increasing efficiency of railroad labor, earnings of the railroads have not been held above the danger mark, according to railroad presidents. H. E. Bryan, president of the Chicago, Milwaukee and St. Paul, appearing for western carriers, and Mr. Mapother joined in declaring that existence of present rate levels and maintenance of the principles that carriers were entitled to a 6 per cent return on the value of their property were absolutely necessary to existence of a satisfactory transportation system. All efforts to reduce expenses and increase efficiency have been inadequate to maintain railroad earn-

ings during the past year, Mr. Bryan said.

C. W. Felton, president of the Chicago Great Western, in answer to questions from Commissioner Lewis, said that "railroads can not be efficient in the employment of labor until the railroad labor board, which controls them under the transportation act, allows them to establish rates of pay which corresponded to the wages paid workers of similar occupations in the communities which the railroad serve.

"There would be little hope, indeed, for the railroads of the United States," he said in his general argument against rate reductions, "if now at the first signs of an ending to a period of depression, the Interstate Commerce Commission should require the reduction of rates or decrease the percentage of return which railroads are to be allowed on their property investment."

The decline in traffic volume during 1921, Mr. Felton, said, was "unprecedented in severity." Both he and Daniel Willard, president of the Baltimore and Ohio, said that reductions of rates on specific commodities had so far failed to stimulate traffic, citing agricultural products and steel manufacturers as examples of experimentation.

Ninety-three road construction projects in 28 States were approved for Federal aid during October, by the Bureau of Public Roads, Department of Agriculture, according to a compilation just made public. Virtually every type of construction is represented in the approved projects.

The States in which these projects were approved and the number of projects approved in each State follow: Alabama 3, Arkansas 3, California 2, Colorado 1, Florida 1, Idaho 1, Kansas 8, Maryland 5, Massachusetts 2, Minnesota 15, Mississippi 6, Missouri 4, Montana 1, Nebraska 2, Nevada 1, New Mexico 2, North Dakota 2, Ohio 2, Oklahoma 1, Pennsylvania 5, South Carolina 5, South Dakota 1, Texas 3, Utah 1, Virginia 12, Washington 1, Wisconsin 2, and Wyoming 1. The longest single stretch of roadway approved in one project during the month was an earth road in Calhoun County, Miss., 35.3 miles long; the shortest, 0.9 mile, was a brick road in Stark County, Ohio.

How the Government has employed Federal-aid funds for road building among the various types of roads, is shown in a summary just prepared by the department. The tabulation covers the expenditure of $211,135,276.31 of Federal-aid funds from the beginning of the work when it was authorized by Congress up to November 1, 1921, a period of 4 years and 4 months. That sum was applied toward the construction of 28,135 miles of roads. The total cost was $496,151,683.43. The average cost was $17,630 per mile.

Nearly 36 per cent of the Federal-aid funds, or $75,600,279.30 went into the construction of 4,653.6 miles of high-grade concrete roads. Next in size were total appropriations of $47,192,895.41. Federal-aid funds applied to the building of 10,043.5 miles of gravel road, at a total cost of $104,614,066.71. Federal-aid funds to the extent of $24,721,020.92 were applied during the period to the construction of 6,864 miles of graded and drained roads, at a total cost of $55,704,253.78. High-grade bituminous-macadam roads, of which 1,323.2 miles were constructed, at a total cost of $41,412,557.22, claimed Federal-aid funds to the extent of $18,646,066.17. For another high type of road—bituminous concrete — $9,299,864.32 was made available through Federal aid. That sum went toward the construction of 772.5 miles of roadway, at a total cost of $23,445,374.88.

Toward the construction of brick roads, of which 444.6 miles were built, Federal aid was available to the extent of $6,925,482.13; and toward the cost of 2,695.5 miles of sand-clay roads the Federal Government contributed $10,495,172.10. The total cost of sand-clay roads was $22,226,362.66.

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The Williamson & Lawson Sand Co., has incorporated under the laws of Massachusetts, for $25,000. The incorporators are Harley F. Williamson, Robert F. Lawson, and James H. Mulcare. The company owns at Provincetown, Mass., 130 acres of white silica sand and is about to build a 900 foot siding and equipment for loading sand. It is estimated that the company has about 10,000,000 tons of silica sand. Mr. Robert E. Lawson is president and has full charge of the sales department, and Mr. Harley F. Williamson is treasurer and secretary and has charge of the production end of the business.

# Open Winter Lends Aid

## Many New Concerns Organized In Eastern Territory

By Our Eastern Correspondent

The sales of sand and gravel in the New York district are keeping fair pace with the distribution of other basic construction materials, such as cement, lime, plaster, etc., and with the continuance of the extensive housing movement in this section, the bulk of consumption is found in this branch of activity. The open winter season is lending good aid to the situation, and the consequence is that the local markets are far more active at this time of the year than otherwise would be the case. Crushed stone is feeling the cessation of road-building operations and no responsive movement is expected in this direction until the advent of spring.

Following the recent decline in prices in the New York market, recorded in the last issue of PIT AND QUARRY, there has been good stability to quotations, and previously established levels are being maintained. In neighboring districts, however, particularly Philadelphia and Baltimore, there has been a price movement, showing a downward trend in sand and higher levels for gravel.

At New York, sand is holding at $1.00 a cubic yard in cargo lots, as against a figure of $1.50 this time a year ago. Dealers are asking $1.80 a yard for the material delivered. The better grade of clean, white sand is priced at $5.00 a cubic yard, on the job, with slackened call.

Gravel in the two standard sizes, 1½ and ¾-inch, is being sold in the wholesale market at $1.75 a cubic yard, with dealers asking around $3.00 for delivered material. Grit is bringing $3.50 at the supply yards.

Crushed stone, 1½ and ¾-inch, holds from $1.80 to $1.90 per cubic yard, f. o. b. city, or close to the figures that have maintained for about a year past. In retail quarters, stocks are being sold at $4.00, delivered. The quotations are firm, without indication of decline.

Portland cement has found a popular level at $2.80, with bag rebate of 10 cents each. Local contractors are paying $2.30 a barrel in carload lots, less bags, delivered on the job. A year ago, the latter figure was $3.50, indicating the general trend of this commodity for the months past. The decline has been gradual and brought about under market pressure.

Hydrate finishing lime is quoted at $16.99 a ton at the warehouse, while common lump lime in 180-pound barrels is selling from $3.00 to $3.50. Retail dealers are asking $24.00 a ton for hydrate finishing material in cloth bags, delivered on the job. Hydrate common, in cloth, is $22.50 a ton, delivered. Finshing lime in standard 300-pound barrel is being sold by the supply dealers at $4.70, and common material, same size container, at $4.40.

Finishing plaster, in cloth, is quoted at $24.50 a ton, while neat wall plaster holds at $21.00, delivered.

The Indian Head Trap Rock Co., Boston, Mass., now being organized, has acquired property at Sherborn, totaling about 80 acres containing practically an inexhaustible supply of trap rock, and is planning for extensive operations on the land. It is proposed to construct a large plant for the production of crushed stone for road-building and other service, with variety of sized material to use in concrete mixtures. The plant will be situated in an ideal location and the nearest competitive properties are those at Westfield, Mass., and Hartford, Conn. Those interested in the new company include Edward S. Larned, 79 Milk street, and Benjamin Fox, 15 Exchange street, Boston.

The Connecticut Sand & Gravel Co., Bridgeport, Conn., has been organized under state laws with a capital of $50,000, to operate in the sand, gravel, stone and rock business in this section. The company is headed by Jonathan Grout and H. L. Shaff, both of Fairfield, Conn.; and W. B. Boardman, 303 Mill Hill avenue, Bridgeport.

The New England Lime Co., Danbury, Conn., is perfecting plans for the rebuilding of its plant at New Milford, recently destroyed by fire with loss estimated at about $200,000, including buildings, equipment and stock. The ground has been cleared for the new structure, which is estimated to cost close to a like amount.

The Industrial Sand & Gravel Corporation, New York, has been organized with a capital of $10,000, to engage in the sand, gravel and crushed stone business. The company is headed by H. P. Schmidt, J. H. Mudge

and W. A. Hanscom. Headquarters will be at 109 Broad street.

The Dorwin Spring Sand & Stone Co., Inc., Syracuse, N. Y., has been formed under state laws with a capital of $100,000, to operate sand and gravel properties in this section. A crushed stone business will also be conducted. The company is headed by E. I. Rose, 121 West Water street, Syracuse.

The Osborne & Marsellis Co., Upper Montclair, N. J., operating a stone crushing plant, has acquired property at Bay street and Bloomfield avenue, Montclair, and will use the property as a storage yard.

The Francisco Brothers Crushed Stone Co., Valley Road, Little Falls, N. Y., has been maintaining good activities at its plant, and recently some heavy blasts have been discharged at the quarry for additional supply. Stocks are being enlarged in anticipation of spring business.

The Irvington Sand Co., Irvington, N. J., has been incorporated under state laws with capital of $25,000, to operate in the sand and gravel business in this section. The company is headed by Julius Starzmann, Herman Osterman and Fred Wolff, 16 Woolsey avenue, Irvington.

The Rockville Quarries Co., Harrisburg, Pa., recently organized, is operating at the quarry in the northern section of the city, formerly held by John W. Reily. Extensive activities and large production are planned. The new company is headed by Robert McCreath, president; John I. and James A. Finn, and Walter S. Johnson.

The Highspire Quarries, Inc., Highspire, Pa., has been formed under state laws, with capital of $50,000, to operate a stone quarry in this section. Walter C. Hocker, Highspire, is treasurer.

The Emmanual Slag Co., Catasauqua, Pa., has recently closed down its slag crushing plant for the season, and will make ready for spring operations at an early date. The production at the plant is used largely for road building operations.

The majority of slate plants at Slatington, Pa., are maintaining active production, and there is a good call for the material for roofing purposes, blackboards, electrical work and other important service. Large shipments are leaving this place daily. There are over 20 plants of this character in the town.

The Herman Slate Co., Bangor, Pa., has filed a petition in bankruptcy with liabilities stated at $61,819, and assets, $25,100. George F. Coffin will act as referee in bankruptcy for the company.

Fire, January 7, destroyed a large part of the plant of the Standard Slag Co., Sharpsville, Pa., with loss estimated at $75,000, including building and equipment. It is said that the plant will be rebuilt.

John H. Miller & Co., Lewistown, Pa., have acquired extensive sand properties in the vicinity of McVeytown, Pa., totaling 86 acres of land, for a consideration said to be $10,500. Adjoining property, containing a particularly high grade sand, has also been secured. The new owners are planning for large production on the tracts.

Considering the season of the year, the sand and gravel business at Pittsburgh, Pa., is encouraging, and all of the leading companies in this line, plying in river traffic, are continuing operations well in line with demand. The Keystone Sand & Supply Co., is bringing in sizeable quantities of material from the Coraopolis section, using its towboat "Peace" for this purpose. Operations are also being conducted by the company in the vicinity of Emsworth. The towboat "Victory" of the company has been in active service for sand and gravel haulage in recent weeks. The Rodgers Sand Co., is keeping its towboats, "Twilight" and "Margaret" active on the river, running between Pittsburgh and Ambridge and adjacent points. The company has placed its towboat "Charlotte," on the ways at Elizabeth, and the vessel will be given a complete overhauling. The Iron City Sand Co. is maintaining activities with its towboat, "P. M. Pfeil," and the J. K. Davidson & Brother Sand Co. is also turning good quantities of sand and gravel in the local market.

The Muskogee Sand & Gravel Co., 805 Barnes Building, Muskogee, Okla., recently organized with a capital of $50,000, is arranging plans for extensive operations on local property. A plant will be established to provide an output of about 3,000 tons of gravel and 1,000 tons of sand per day. The equipment will include crushing machinery, screens, stiff-leg derrick, cars

for hauling, pumping machinery, oil engine, etc. O. M. Drake is vice-president and manager.

The Thomas Gravel Co., Alexandria, La., recently formed with a capital of $500,000, has leased large properties in this section and will commence operations for sand and gravel production at an early date. The property is estimated to contain about 10,000,000 cubic yards of material. I. L. Thomas, president and general manager, will be in charge.

## A Paid Secretary

IOWA is to be congratulated on having taken a forward step in that the recent meeting of its Sand and Gravel Association took steps toward having a paid secretary who will devote all his time to the work of the organization.

This, we believe, is the way for any state association to function successfully. Iowa has not lacked for secretarial brains and endeavor. But any man who is doing a job "on the side" must necessarily give it only such time as he is not engaged in his main occupation.

Take the same man away from his sand and gravel business, make of him a "professional" secretary, pay him well for it, and you'll be surprised at what happens.

We don't know the inside of Iowa politics—don't know who the candidates are for the place—and are not "plugging" for any individual. We are just saying what might happen in almost any state which is trying to get along without maintaining an association office and staff.

Getting results out of an organization is a day-and-night job for a high-powered executive. More power to Iowa, now that it has found this to be true and is determined to profit by it. There are some other states to come into line.

The Louisiana Sand and Gravel Company of Monroe, La., has been organized with a capital of $100,000.

## In Cement Districts

### Notes Gathered from Many of the Mills Regarding Present Activities

The Lehigh Valley section of Pennsylvania is experiencing its usual mid-winter season of partial inactivity, and a number of the plants are now out of commission for several weeks to come, awaiting orders and conditions that will warrant resumption.

A visit to this district and the witnessing of the overcast sky here and there, due to smoke, as well as the breathing of the characteristic ozone that pervades this region, indicates that production is going forward at some of the mills, while repair men in their rounds at other mills show conclusively that preparations are being made for the forthcoming season. The installation of additional power lines by the local electric company is another evidence of anticipations of heavier loads during the spring period.

With the year 1921 well established as the best in the Portland cement industry, the outlook for the coming year tends to the opinion that it will be a record-breaker in every sense of the word. Road construction looms as one of the big factors in the consumption program, and it is estimated that from 25,000,000 to 35,000,000 barrels of material will be utilized for this purpose. Delayed building construction, as well, holds no mean status in the expectations, and a new high-water mark for Portland cement in this line is looked for.

The Nazareth Cement Co., Nazareth, Pa., has been continuing manufacture at its local mills throughout the holiday period, and it is said that advance orders received insure production for some time ahead.

The Atlas Portland Cement Co., the Alpha Portland Cement Co., and the Lehigh Portland Cement Co., are among the leading companies that are maintaining operations at their different plants, at a point suitable for all current demand. The Coplay Cement Co., Coplay, has a large percentage of its mills under curtailment. A good force is being held together for repair and improvement work.

Following the recent loss of barns of the Lehigh Portland Cement Co., at Ormrod, due to fire, the Whitehall Cement Co. sustained a similar loss of one of its barns, located on the back road between Coplay and Cementon, on January 19, with loss approximating $10,000. The building was 30x60 feet, and was quickly demolished by the fire.

William O. Acker, an engineer at the plant of the Giant Portland Cement Co., Egypt, died at the Allentown Hospital, Allentown, Pa., on January 3, at the age of 44 years.

The Bessemer Limestone & Cement Co., Youngstown, Ohio, is maintaining active production at its mills and has booked close to 200,000 barrels of material for delivery in 1922, or about one-sixth of the maximum output at the mills. The incoming orders at the plant indicate that about 80 per cent of the plant capacity will be sold for the year within a very short time.

The Cape Girardeau Portland Cement Co., Cape Girardeau, Mo., is planning for extensive additions and improvements in its mills, including the remodeling of existing buildings, to develop a capacity of about 2,400 barrels of cement per day. New grinding machinery and other equipment will be installed, as well as additional power plant equipment. The work is estimated to cost about $130,000. It is also proposed to beautify the grounds of the plant and to build an administration building at a later date, the structure to cost about $25,000. Charles L. Harrison is president.

The Globe Portland Cement Co., 416 McKnight Building, Minneapolis, Minn., has awarded a contract to H. C. Struchen, 416 Dakota Building, St. Paul, Minn., for the erection of a new cement plant at Dubuque, Ia. The plant will consist of a number of mill buildings, power plant, machine shop, etc., and is estimated to cost close to $1,500,000, including machinery. It is proposed to break ground and commence active work early in March. The C. L. Pillsbury Co., 1200 Second avenue, South Minneapolis, Minn., is engineer for the project.

The Universal Portland Cement Co., Universal, Pa., is increasing the capacity of the raw material grinding department at its local mill, and will provide for increased storage facilities in the clinker department. The company has made a number of important betterments at the plant during the past year, including a new coal drying and pulverizing plant, dust collecting system installation on kiln and dryer stacks, as well as similar equipment for the raw material building. A number of dwellings were erected for employes and a recreation center established for operatives.

The White Star Portland Cement & Coal Co., Nazareth, Pa., recently organized under Delaware laws with capital of $3,000,000, to operate in the vicinity of Birmingham, Ala., has preliminary plans under way for its proposed new cement mill at Village Springs, near Birmingham, to consist of a number of mills, power plant and auxiliary buildings, estimated to cost in excess of $1,000,000. Property has been acquired for the project, and the new mills will develop an output of close to 1,000,000 barrels a year. Richard K. Meade & Co., 11 East Fayette street, Baltimore, Md., engineers, have been commissioned to prepare plans and specifications for the plant. A. G. Connolly is president; and Charles W. K. Shafer, secretary.

## Forged and Rolled Manganese Steel

The American Manganese Steel Company, Chicago Heights, Ill., recently sent out the following notice to the trade:

"It is a pleasure to announce that we now are in position to produce forged and rolled manganese steel. In consequence, we earnestly solicit your inquiries and orders for rods, bars and sheets of practically any description.

"This opens a new field which will include the many lines of work where severe service has called for the use of manganese steel but its application was impossible on account of unusually thin sections or areas that could not be cast successfully.

"In your experience you must have been confronted with problems that could have been solved by the use of forged and rolled manganese steel. May we ask that you consult with your engineers on this subject, obtain their recommendations and submit them to us, supplemented by blue prints, etc., so that we can submit prices for your consideration?"

## Recent Patents

The following patents of interest to readers of this journal recently were issued from the United States Patent Office. Copies thereof may be obtained from R. E. Burnham, patent and trade-mark attorney, Continental Trust Building, Washington, D. C., at the rate of 20 cents each. State number of patent and name of inventor when ordering.

1,400,697. Screen for sand, gravel, etc. George A. Seivour, Detroit, Mich.

1,400,866. Ore car. Argyle Campbell, Chicago, Ill., assignor to Enterprise Railway Equipment Co., same place.

1,400,867. Dumping car. Argyle Campbell, Chicago, Ill., assignor to Enterprise Iailway Equipment Co., same place.

1,400,902. Self-opening bucket. Clyde Nolan, Chicago, Ill., assignor to American Steam Conveyor Corporation, same place.

1,400,903. Self-opening bucket. Clyde Nolan, Chicago, Ill., assignor to American Steam Conveyor Corporation, same place.

1,400,922. Crane-hook grab-bucket. Frank H. Williams, Buffalo, N. Y.

1,401,271. Cableway. Thomas S. Miller, South Orange, N. J.

1,401,319. Boom-drag-line excavator. William H. Crawford, Los Angeles, Cal.

1,401,370. Automatic feeding means for shakers. Paul Sterling, Wilkes-Barre, Pa.

1,401,445. Method of forming sand from gravel. Joseph H. Rodgers, Pittsburgh, Pa.

1,401,751. Traveling grizzly. Colby M. Avery, Aurora, Ill., assignor to Stephens-Adamson Mfg. Co.

1,401,782. Excavating bucket. Vilas H. Jackson, Cleveland, Ohio.

1,401,804. Dipper tooth designed for use on shovels. Snow F. MacDougald and Edward E. Bohan, Cap Tourmente, Quebec, Canada.

1,401,951. Clamshell machine. Edwin J. Armstrong, Erie, Pa., assignor to Ball Engine Co., same place.

1,401,172. Dump car. William H. Miner, Chazy, N. Y., assignor to Enterprise Railway Equipment Co., Chicago, Ill.

1,402,199. Feed-reducing machine. Oliver J. Williams, Burlingame, Cal., assignor to Williams Patent Crusher & Pulverizer Co., St. Louis, Mo.

Mr. H. H. Clifford
Locomotive Sales Manager,
Hadfield-Penfield Steel Co.,
Bucyrus, Ohio

Mr. H. E. Billington
Manager of Sales,
Thew Shovel Co.,
Lorain, Ohio

## Moore Speedcrane

The Moore Speedcrane is designed along simple lines, applying the principle of the auto gear shift to crane construction.

By use of a sliding point one clutch is made to take care of three operations, swing, travel, and boom hoist. This one shift lessens appreciably the number of working parts, permitting the construction of the remaining parts along heavier lines, and making possible increased speed in operation. The manufacturers have set 400 to 600 cubic yards of sand as the amount that one man can handle in a day with a Speedcrane.

It is equipped with a three-quarter yard clamshell bucket, has a 35 foot boom, weighs about 27,00 pounds and is operated by a 40-inch x 7 ft., 4-inch boiler working at 125 pounds pressure. It is mounted on traction wheels and can be steered by hand or by power.

The Speedcrane is manufactured by Moore Brothers, 39 S. LaSalle St., Chicago.

## Will Meet in Tulsa

Stone producers in some of the southwestern states in western classification freight territory are planning to meet in Tulsa, Okla., some time during the present month.

These are for the most part so widely scattered as to be non-competitive, so that they feel they can work together to very good advantage.

Frank Glasscock, of the Hughes Stone Company, 808 Mayo Building, Tulsa, Okla., in looking after the arrangements.

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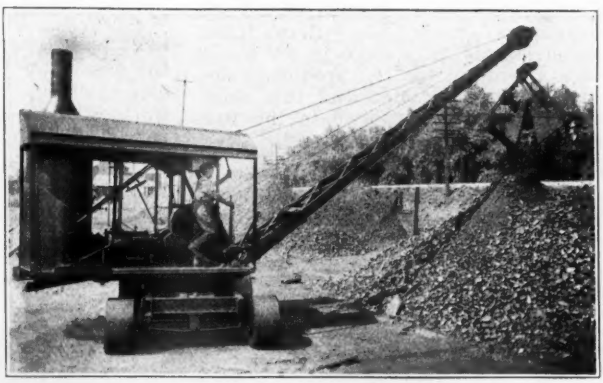
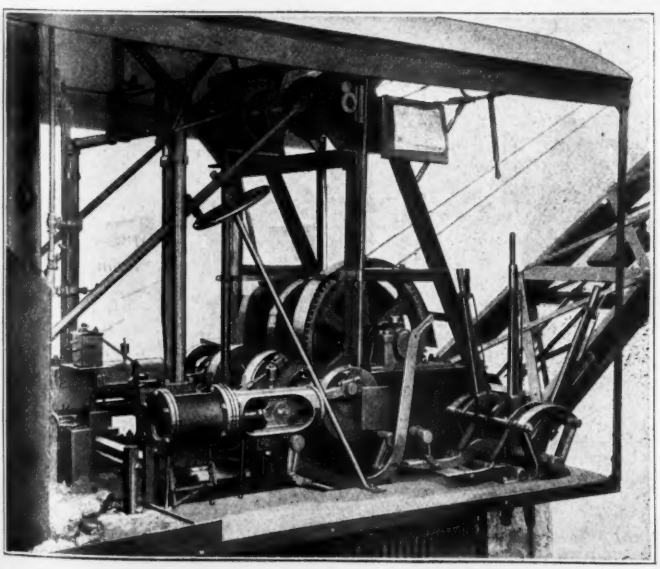
The Ohio Blue Limestone Company has increased its capital from $25,000 to $30,000.





Above—

Moore Speedcrane in action.

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At left—

Hoist and control of Speedcrane

## Blaw-Knox Exhibit Varied

Mr. R. D. Aldrich of the Blaw-Knox Company, is interested in more things than buckets. At the Road Show he was taking orders for a line of equipment ranging from the aforesaid buckets to complete steel buildings.

These steel buildings were quite interesting to visiting gravel and stone men. Their strength, lightness, portability and low cost impressed quite a number and many saw where such structures could be used to advantage around their own operations. Mr. Aldrich had an interested audience most of the time.

Had this been strictly a stone or gravel men's show, instead of a road contractors' show, the Blaw-Knox buckets would have come in for much more attention, for the producers are very interested students of this class of equipment and appreciate the fine points of the devices very well.

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Mr. George W. Renwick has been appointed sales manager of the Chicago Gravel Company, with offices at 1109 Fisher Building.

## Demonstrates Scraper Bucket

Mr. F. H. Beach of the Beach Manufacturing Company reports that the cableway he exhibited at the Road Show attracted quite a bit of attention, and that he expects to make a number of sales on the strength of it. Mr. Beach is a man who knows his subject well and can talk interestingly on it.

The company reports a very successful year and good results at the Road Show. The feature that impresses all who see the Beach Bottomless Bucket operated with a double drum hoist is its ease and flexibility of operation, its efficiency for both dry bank and under water excavation and the economies in production that it is able to effect. Mr. Beach is at present working on the design of buckets of larger capacity and expects that the success he has had with the models shown up to this time will be more than equalled by his larger equipment which will fit better into the bigger operations.

Mr. R. D. Aldrich, Chicago Sales Engineer, Blaw-Knox Co., Pittsburgh, Pa.

Mr. F. H. Beach, Beach Mfg. Co., Charlotte, Mich.

## Climbs in Under Own Power

Mr. James G. Paddock, secretary and treasurer of the Locomotive Crane Co. of Champaign, Ill., said things were "going great."

Mr. Paddock is mighty proud of the performance of the Little Giant crane that he exhibited at the Road Show. It was brought over to the Coliseum under its own power and easily negotiated the steep grades on Wabash Avenue right at the entrance to the building. Mr. Paddock was a pretty busy man all during the show, describing to interested road men how the whole operation of the Little Giant crane was controlled by one lever.

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Eight wagonloads of sand were donated by the Stewart-Peck Southwestern Sand Company of Topeka, Kan., and sprinkled on the icy sidewalks of that city. The sand was not solicited, the company requesting permission from the street commissioner to perform this act, which greatly facilitated the handling of the traffic.

## Osgood Crane Takes Well

Mr. Day A. Orr says that Osgood cranes made many friends at the Coliseum, and that the crane is able to hold friends as well as make them.

Mr. Orr explained to all comers how the Osgood digs equally well from either end, how the treads never interfere with the operation of the dipper, how it is provided with high and low speeds for traveling, will climb heavy grades and is convertible for crane, clamshell or dragline service. He also told of the paver steering feature of the Osgood which permits control of the machine by the operator from the cab, while traveling at high speed. If any more information was required he usually drew attention to the independent treads, armored boom, double geared shipper shaft with manganese pinions and machine cut gears.

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The Western Gravel and Supply Company, at Peru, Ind., has filed a notice of dissolution with the secretary of state.

Mr. James A. Paddock, Secretary and Treasurer, The Locomotive Crane Co., Champaign, Ill.

Mr. Day A. Orr, The Osgood Co., Marion, Ohio

## Plenty of Buyers for Byers

Mr. L. A. Babcock was very busy selling Byers cranes when we saw him. Mr. Babcock is a hustler and we bet that nobody who was interested in cranes got away without learning all about the Byers.

Mr. Babcock had many opportunities to run over the good points of the Byers Full Circle Model 10 crane and the new Model 4 auto crane. He showed many people the features of the Byers that make for speed, flexibility, production and economy. He and the other Byers men demonstrated the ease of control to so many interested visitors that he says he is quite sure there is not a prospective crane buyer attending the show who did not learn all that was to be learned of the Byers.

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The Deckwell Sand Gravel Company, 4002 West Madison street, Chicago, Illinois, has been organized with a capital of $300,000, to deal in building materials. Wm. E. Docker, Robert L. Irvin, Miner J. Southwell; correspondent, George L. Reker, 1406 Ashland Block.

## Koehring Crane Attracts

Mr. A. E. Holcomb was at the Koehring booth, demonstrating the new crane which is designed by himself and embodies the results of his 21 years of experience in crane building.

Mr. Holcomb knows the subject of cranes inside out. During his 21 years of experience with them he has done almost every kind of work that is connected with the design, construction or operation of a crane. Most of his time has been spent in the positions of chief engineer and superintendent in charge of contract work. In the new 20-ton capacity Koehring Crane are the results of these years of thorough experience and Mr. Holcomb is able to show interestingly just where the advantages and refinements come in. And he had plenty of opportunity, for the Koehring booth was a mighty busy place.

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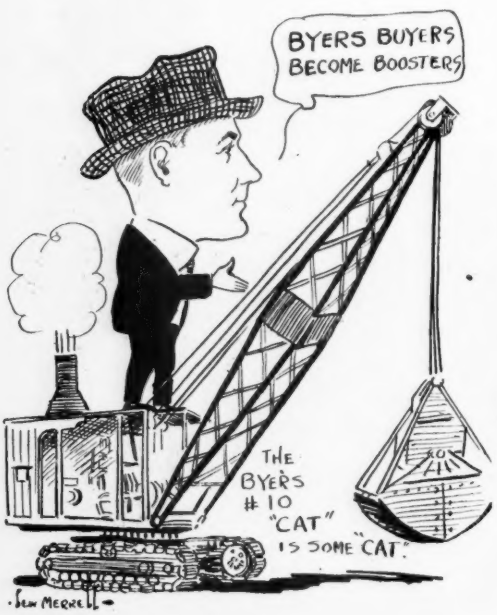
Directors of the Riverside Portland Cement Co., Riverside, Cal., have announced an extra dividend of $1.50 a share, payable to stock holders of record on January 3rd.




Mr. L. A. Babcock, Sales Manager, Byers Machine Co., Ravenna, Ohio

THE KOEHRING 20 TON CAPACITY HEAVY DUTY CRANE IS THE RESULT OF 21 YEARS EXPERIENCE AS CHIEF ENGINEER AND SUPT. IN CHARGE OF CONTRACT WORK
COLISEUM GOOD ROADS SHOW
Sam Merrell

Mr. A. E. Holcomb, Sales Manager and Designing Engineer, Koehring Co., Milwaukee, Wis.

## Foley Traction Rim Company

A new device that will help to make the motor truck much more useful around pits and quarries is the Foley Traction Rim. A pair of these rims is attached to each of the rear wheels of the truck, one rim on either side of the tire. When the truck travels over sand, mud, or any other loose material, the lugs on the rims immediately take up the lost traction and the truck is able to pull itself out without the loss of power.

The rims are made of electric cast steel and may be attached or removed in 20 minutes. They may be used with solid or pneumatic tired trucks, and it is not necessary, in performing this work, to remove the wheel. Rims for all makes and sizes of cars are carried in stock for immediate shipment.

Literature describing the rims and illustrating their design and advantage will be sent upon request. Address the Foley Traction Rim Company, Minneapolis, Minn.

## Williams Clamshell Buckets

The Williams quick acting clamshell bucket, built on the "triangle principle," is designed to hold the head bearing rigid and prevent "wobble" and wear at the head pin. This would keep the sheaves from getting out of line and would save wear on the cable.

Hinge bearing is large and one-piece, made so with the idea of holding the scoops in perfect alignment, and preventing the bucket from spilling any part of its load between the scoops.

This and all other buckets made by the Williams Company are well described in a new illustrated catalog which shows all kinds of clamshell work and contains blueprints of all types of buckets. Copies of this catalog may be had by addressing the G. H. Williams Company, Erie, Pa.

The Hercules Powder Company of Wilmington, Del., has reduced the list price on its blasting caps. Details will be supplied upon request.

## Armco Ingot Iron

Armco Ingot Iron is made at the plant of the American Rolling Mills Company at Middletown, Ohio. It is a metal 99.84 per cent pure, the finest ever made into sheets and plates on a commercial basis.

Armco takes and holds galvanizing much better than ordinary iron. This, added to the fact that the metal itself resists rust very effectively, makes it a particularly desirable material for use in roofings and sidings of buildings in and about gravel pits, quarries, cement mills, gypsum plants, phosphate rock plants, and silica plants.

Corrosion and rusting of culverts, fencing, roofing and siding have come to be a thing of the past where Armco Ingot Iron has been used. This iron is giving the most satisfactory service possible in hundreds of products from wash tubs and ash cans to complete factory buildings.

The American Rolling Mills Company has prepared literature showing the wide application of Armco and will supply it upon request. Write the Advertising Department of the American Rolling Mills Company, Middletown, Ohio.

Mr. H. G. Barkhausen, General Manager, Northwest Engineering Co., Green Bay, Wis.

Mr. Earl C. Gilmore, Sales Manager, Heil Co., Milwaukee, Wis.

Mr. Fred A. Gill, Inventor and Manufacturer of the Gill Well Drill Sharpening Machine, Lebanon, Pa.

Mr. Arthur A. Prausnitz, Koppel Industrial Car & Equipment Co., Chicago, Ill.

Mr. D. D. Guilfoil, General Sales Manager, Sauerman Bros., Chicago, Ill.

SOME ROAD SHOW I'LL SAY! SELLING OUR MACHINES RIGHT OFF THE FLOOR AND GETTING THE CHECKS FOR THEM
FULL LINE OF MATERIAL HANDLING MACHINERY

Mr. G. R. Bascom,
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Mr. A. C. Frick, Chicago Sales Office,
Keystone Driller Co., Beaver Falls, Pa.

W. W. Clements, Asst. to President,
Industrial Works, Bay City, Mich.

Mr. G. F. Climo,
Brown Hoisting Machinery Co., Cleveland, Ohio.

## Belt-Carrying Equipment

Dust proof bearings, with grease reservoir holding six months' supply, are some of the features of Stearns mountings for conveyor belts. Other advantages are described in Bulletin No. 100-B, published by the Stearns Conveyor Company, E. 200th St. and St. Clair Ave., Cleveland, Ohio.

## A Power Swiveling Loader

The Link-Belt Company, of Philadelphia, Chicago and Indianapolis, after years in developing portable loaders, have placed on the market a machine that digs and loads all sorts of bulk material without need of labor—other than the operator.

The elevating medium is arranged to swivel in a horizontal plane. This feature, coupled with a self-propelling mechanism, produces a unit which actually clears a path wide enough for the loader to move into piles of material.

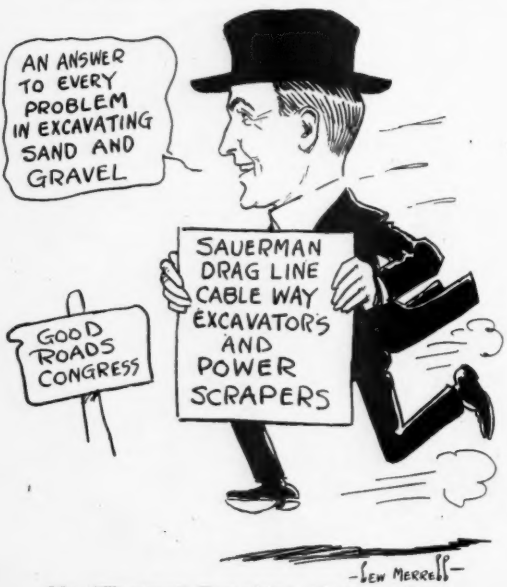
The operator directs the digging end of the elevator in an arc, the maximum width of which is over 20 feet. When cutting reaches the end of each arc, the loader is advanced a short distance automatically towards the pile, thus making a wide cut in the pile as far as required. Provision is made to prevent damage to machine in case of buckets striking a hidden obstruction.

It is not necessary to drag or scrape the material into the path of the buckets. The digging buckets are carried on chain, the whole operating on the principle of taking the buckets to the material. The hardest work required of a loader is the digging. With this in mind the buckets are provided with digging edges; the top of every other bucket is an arc, and the alternate bucket a rectangle. This feature permits of the bucket digging with a fresh surface, cutting with a portion of its edge only, and eliminating the heavy drag and shock to machinery occasioned by the entire bucket surface digging into the pile.

## Cook Engines

The Cook Motor Company, Deleware, Ohio, is furnishing Cook engines as standard equipment for the best known drilling machines, which should be a guaranty of their serviceability on all kinds of pit and quarry work.

These engines are made in single and double cylinder type, in sizes from 5 to 40 horsepower. Run on gasoline, kerosene, gas. Built for steady, continuous, reliable work.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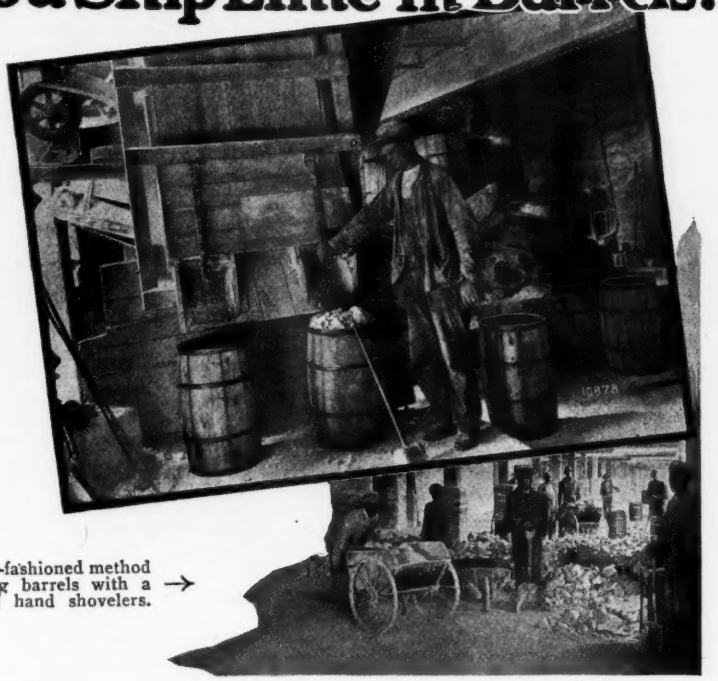
GOOD ROADS CONGRESS
-Lew Merrell-

Mr. "Tommy" Tompkins, Manager Eastern Territory, Sauerman Bros., Chicago, Ill.

Mr. Mark J. Woodhull, Central Sales Manager Bucyrus Co., South Milwaukee, Wis.

# Do You Ship Lime in Barrels?



Link-Belt filling chute loading barrels. Link-Belt Conveyors deliver the lime to bin from which it is chuted. →

The old-fashioned method of filling barrels with a gang of hand shovelers. →

Link-Belt Lime Handling Machinery is rapidly superseding old-fashioned handling methods in the lime industry.

A comparison between old and modern methods in one phase of lime handling, that of loading, is afforded by these illustrations. With one man to operate the Link-Belt filling chute, as shown in the top illustration, and shake down the lime, another to do the mauling, and two men to cooper and roll the barrels out of the way, it is easy to turn out a barrel a minute.

Link-Belt engineers would be glad to prescribe for your loading conditions, or any other phase of lime handling.

742 *Send for new catalog No. 416*

**LINK-BELT COMPANY**

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Hunting Park Ave. and P. & R. R. Rwy.

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300 W. Pershing Rd.

**Other Offices in Principal Cities**

**LINK-BELT**
**Lime Handling Machinery**

## Koppel Car "Stands Up"

The photograph here shown is of the Koppel Car that was used one whole season on the new road built last year between Muskegon, Michigan and Grand Rapids, Michigan. For an old veteran it is in a remarkably fine state of preservation. The rough treatment to which a quarry car is

subjected has not impaired the usefulness of this one, and it will go back to work again at the beginning of next season. As the sign above it in the Koppel booth at the Road Show says "it is only on vacation."

## Assumes New Position

Mr. W. W. Mutter, formerly secretary and treasurer of the Northwestern Engineering Company, Green Bay, Wisconsin has been appointed Vice-President of the company and will be in charge of sales in the Central District with offices at Chicago, in room 1520, Steger Building. Mr. L. E. Houston, formerly of the International Harvester Company, has been made secretary-treasurer of the Northwestern Engineering Company, succeeding Mr. Mutter. Mr. Houston's office will be at the Green Bay plant.

The Globe Portland Cement Co., a Minnesota corporation with an authorized capital of $5,000,000, and with offices in Minneapolis, is planning to erect a huge cement plant in Dubuque, Iowa, at a cost of $1,600,000. Definite information regarding the project is not yet available, but early developments are anticipated. Besides making cement, the plant will put out washed crushed stone for road building purposes. The C. L. Pillsbury Company, of Minneapolis is in charge of the engineering work.

D. B. Frisbie of 96 Page Ave., Atlanta, Ga., has been given the responsibility of developing a large selling organization throughout the south for Barber-Greene Company, Aurora, Ill., manufacturers of B-G portable belt conveyors and B-G self-feeding bucket loaders. He has offices at 90½ N. Forsythe St., Atlanta, Ga.

The Kentucky Retail Lumber Dealers Association is due to hold its annual meeting at the Seelbach in Louisville, February 7-8. This holds interest for the local sand and gravel people because it usually brings to town many of their customers from out in the state who are members of the association.

The Auglaize Stone Quarry, at Wapakoneta, Ohio, is about ready to open, the machinery is being placed, and operations are expected to commence in about two weeks. This quarry enjoys the distinction of being the only stone quarry in Auglaize County. President, Jerry Campbell; treasurer, S. W. McFarland; secretary, Lewis Scott.

Negotiations are being carried on for the erection of a large cement plant at Gore, Georgia. The principals in the negotiation are not disclosed. This location contains nearly 9,000,000 tons of limestone, or a sufficient quantity to keep a 3,000-barrel mill in operation for 25 years. The limestone is of high quality and may be used for Portland cement, crushed-rock products, fluxing stone, concrete, roadbed or macadam, top dressing for roads, roofing, as a filler for fertilizer, and for lime, both building and hydrated.

The Bessemer Limestone and Cement Company, of Youngstown, Ohio, has increased its capital stock from $150,000 to $250,000. This company was incorporated in 1888 with a capital of $60,000, which has been increased at various times to $593,300.

Sylvio Casparis, founder of the Casparis Stone Company, at Marble Cliff, Ohio, died December 20, at Mt. Carmel Hospital in Columbus, Ohio. Mr. Casparis was born in Italy in 1850, and came to America in 1857. He made his home in Columbus, Ohio, since 1888, at which time he organized the Casparis Stone Company. His death was due to heart trouble.